



# San Joaquin Valley

AIR POLLUTION CONTROL DISTRICT



MAR 04 2014

Bob Demos  
Crimson Resource Management  
5001 California Ave, suite 206  
Bakersfield, CA 93309

**Re Notice of Preliminary Decision - Authority to Construct**  
**Facility Number S-2018**  
**Project Number S-1134252**

Dear Mr Demos

Enclosed for your review and comment is the District's analysis of Crimson Resource Management's application for an Authority to Construct for two 85 MMbtu/hr steam generators and to lower a crude oil storage tank's true vapor limit, at the NE/4 of Section 25, Township 31S, Range 22E in the Midway Sunset oil field

The notice of preliminary decision for this project will be published approximately three days from the date of this letter. After addressing all comments made during the 30-day public notice and 45-day EPA notice comment periods, the District intends to issue the Authority to Construct. Please submit your written comments on this project within the 30-day public comment period, as specified in the enclosed public notice.

Thank you for your cooperation in this matter. If you have any questions regarding this matter, please contact Mr. David Torii of Permit Services at (661) 392- 5620.

Sincerely,

David Warner  
Director of Permit Services

DW DBT/st

Enclosures

cc Mike Tollstrup, CARB (w/ enclosure) via email  
cc Gerardo C. Rios, EPA (w/ enclosure) via email

**Seyed Sadredin**  
Executive Director/Air Pollution Control Officer

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**San Joaquin Valley Air Pollution Control District**  
**Authority to Construct Application Review**  
**Steam Generators**

Facility Name	Crimson Resource Management	Date	1/23/14
Mailing Address	5001 California Ave, suite 206 Bakersfield, CA 93309	Engineer	David Torii
		Lead Engineer	Allan Phillips
Contact Person	Bob Demos		
Telephone	661-716-5001 x 28		
Application #(s)	S-2018-20-1, 29-0 and '30-0		
Project #	1134252		
Deemed Complete	11/19/13		

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**I Proposal**

Crimson Resource Management (CRM) has requested Authority to Construct (ATC) permits for the installation of two 85 MMbtu/hr steam generators and to lower a crude oil storage tank's TVP limit

**II Applicable Rules**

Rule 2201	New and Modified Stationary Source Review Rule (4/21/11)
Rule 2410	Prevention Of Significant Deterioration (11/26/12)
Rule 2520	Federally Mandated Operating Permits (6/21/01)
Rule 4001	New Source Performance Standards (4/14/99)
Rule 4101	Visible Emissions (2/17/05)
Rule 4102	Nuisance (12/17/92)
Rule 4201	Particulate Matter Concentration (12/17/92)
Rule 4301	Fuel Burning Equipment (12/17/92)
Rule 4305	Boilers, Steam Generators and Process Heaters – Phase II (8/21/03)
Rule 4306	Boilers, Steam Generators and Process Heaters – Phase III (3/17/05)
Rule 4320	Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 50 MMBtu/hr (10/16/08)
Rule 4623	Storage of Organic Liquids (05/19/05)
Rule 4801	Sulfur Compounds (12/17/92)
CH&SC 41700	Health Risk Assessment
CH&SC 42301.6	School Notice

Public Resources Code 21000-21177 California Environmental Quality Act (CEQA)  
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387 CEQA Guidelines

**III Project Location**

The steam generators and tank are/will be located within the NE/4 of Section 25, Township 31S, Range 22E in the Midway Sunset oil field in CRM's Heavy Oil Western stationary source. The equipment is not located within 1,000 feet of the outer boundary of a K-12 school.

Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project

#### **IV Process Description**

The steam generators will be used to thermally enhance oil reservoirs. Natural gas will be combusted in the steam generators to produce steam for injection into heavy crude oil bearing strata via injection wells to reduce viscosity of the crude oil, thereby facilitating thermally enhanced oil production.

#### **V Equipment Listing**

##### Pre-Project Equipment Description (see PTO in Appendix B)

S-2018-20-0 986 BBL FIXED ROOF STORAGE TANK

##### Proposed ATCs

S-2018-20-1 MODIFICATION OF 986 BBL FIXED ROOF STORAGE TANK LOWER TVP LIMIT FROM 11 PSIA TO 8 PSIA

S-2018-29-0 85 MMBTU/HR NATURAL GAS/TEOR GAS-FIRED STEAM GENERATOR WITH A NORTH AMERICAN ULTRA-LOW NOX MAGNA-FLAME LE BURNER (OR EQUIVALENT) WITH FLUE GAS RECIRCULATION

S-2018-30-0 85 MMBTU/HR NATURAL GAS/TEOR GAS-FIRED STEAM GENERATOR WITH A NORTH AMERICAN ULTRA-LOW NOX MAGNA-FLAME LE BURNER (OR EQUIVALENT) WITH FLUE GAS RECIRCULATION

##### Post Project Equipment Description

S-2018-20-1 986 BBL FIXED ROOF STORAGE TANK WITH PV VALVE

S-2018-29-0 85 MMBTU/HR NATURAL GAS/TEOR GAS-FIRED STEAM GENERATOR WITH A NORTH AMERICAN ULTRA-LOW NOX MAGNA-FLAME LE BURNER (OR EQUIVALENT) WITH FLUE GAS RECIRCULATION

S-2018-30-0 85 MMBTU/HR NATURAL GAS/TEOR GAS-FIRED STEAM GENERATOR WITH A NORTH AMERICAN ULTRA-LOW NOX MAGNA-FLAME LE BURNER (OR EQUIVALENT) WITH FLUE GAS RECIRCULATION

#### **VI Emission Control Technology Evaluation**

Ultra Low-NO<sub>x</sub> burners reduce NO<sub>x</sub> formation by producing lower flame temperatures (and longer flames) than conventional burners. Conventional burners thoroughly mix all the fuel and air in a single stage just prior to combustion, whereas low-NO<sub>x</sub> burners delay the mixing of fuel and air by introducing the fuel (or sometimes the air) in multiple stages. Generally, in the first combustion stage, the air-fuel mixture is fuel rich. In a fuel rich environment, all the oxygen will be consumed in reactions with the fuel, leaving no excess oxygen available to react with nitrogen to produce thermal NO<sub>x</sub>. In the secondary and tertiary stages, the combustion zone is maintained in a fuel-lean environment. The excess

air in these stages helps to reduce the flame temperature so that the reaction between the excess oxygen with nitrogen is minimized.

The use of flue gas re-circulation (FGR) can reduce nitrogen oxides (NO<sub>x</sub>) emissions by 60% to 70%. In an FGR system, a portion of the flue gas is re-circulated back to the inlet air. As flue gas is composed mainly of nitrogen and the products of combustion, it is much lower in oxygen than the inlet air and contains virtually no combustible hydrocarbons to burn. Thus, flue gas is practically inert. The addition of an inert mass of gas to the combustion reaction serves to absorb heat without producing heat, thereby lowering the flame temperature. Since thermal NO<sub>x</sub> is formed by high flame temperatures, the lower flame temperatures produced by FGR serve to reduce thermal NO<sub>x</sub>.

Tank S-2018-20 is equipped with a pressure-vacuum (PV) relief vent valve set to within 10% of the maximum allowable working pressure of the tank. The PV-valve reduces VOC wind induced emissions from the tank vent.

## VII. General Calculations

### A. Assumptions

#### Tank S-2018-20:

- Fluid throughput: 50 bbl/day
- Pre-project TVP limit: (11.0 psia) (source: Rule 4623 limit)
- Post-project TVP limit: (8.0 psia) (source: applicant)

#### Steam Generators S-2018-29-0 and '30-0:

- The maximum operating schedule is 24 hours per day
- Annual potential to emit is calculated based on 8,760 hours of operation per year
- Natural Gas Heating Value: 1,000 Btu/scf (District Practice)
- F-Factor for Natural Gas: 8,578 dscf/MMBtu corrected to 60°F (40 CFR 60, Appendix B)

### B. Emission Factors

Pollutant	Steam Generator Emission Factors		Source
NO <sub>x</sub>	0.008 lb-NO <sub>x</sub> /MMBtu	7 ppmvd NO <sub>x</sub> (@ 3%O <sub>2</sub> )	Applicant And BACT
SO <sub>x</sub>	0.00285 lb-SO <sub>x</sub> /MMBtu		District Policy APR 1720
PM10	0.0076 lb-PM10/MMBtu		AP-42 (07/98) Table 1.4-2
CO	0.019 lb-CO/MMBtu	25 ppmvd CO (@ 3%O <sub>2</sub> )	Applicant
VOC	0.0055 lb-VOC/MMBtu	13 ppmvd VOC (@ 3%O <sub>2</sub> )	AP-42 (07/98) Table 1.4-2
CO2e	117 lb-CO2e/MMBtu		CCAR document

### C. Calculations

**1. Pre-Project Potential to Emit (PE1)**

**2.**

Since the steam generators are new emission units, PE1 = 0 for all pollutants.

Tank S-2018-20-0	
VOC - Daily PE1 (lb/day)	VOC - Annual PE1 (lb/Year)
147.4	35,170

See emission calculations in Appendix C

**2. Post Project Potential to Emit (PE2)**

The potential to emit for the steam generators is calculated as follows, and summarized in the table below:

$$\begin{aligned} \text{PE2}_{\text{NO}_x} &= (0.008 \text{ lb/MMBtu}) * (85 \text{ MMBtu/hr}) * (24 \text{ hr/day}) \\ &= 16.3 \text{ lb NO}_x/\text{day} \end{aligned}$$

$$\begin{aligned} &= (0.008 \text{ lb/MMBtu}) * (85 \text{ MMBtu/hr}) * (24 \text{ hr/day}) * (365 \text{ day/year}) \\ &= 5957 \text{ lb NO}_x/\text{year} \end{aligned}$$

PE2 (each steam generator)		
	Daily Emissions (lb/day)	Annual Emissions (lb/year)
NO <sub>x</sub>	16.3	5,957
SO <sub>x</sub>	5.8	2122
PM <sub>10</sub>	15.5	5,659
CO	38.8	14,147
VOC	11.2	4,095
CO2e	238,680.0	87,118,200

Tank S-2018-20-1	
VOC - Daily PE2 (lb/day)	VOC - Annual PE2 (lb/Year)
107.2	25,578

See emission calculations in Appendix C

**3. Pre-Project Stationary Source Potential to Emit (SSPE1)**

Pursuant to District Rule 2201, the SSPE1 is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of Emission Reduction Credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions (AER) that have occurred at the source, and which have not been used on-site.

SSPE1 (lb/year)*					
Permit Unit	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
SSPE1	0	0	0	0	230,354

\*from 1123982

#### 4 Post Project Stationary Source Potential to Emit (SSPE2)

Pursuant to District Rule 2201, the SSPE2 is the PE from all units with valid ATCs or PTOs at the Stationary Source and the quantity of ERCs which have been banked since September 19, 1991 for AER that have occurred at the source, and which have not been used on-site

SSPE2 (lb/year)					
Permit Unit	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
SSPE1	0	0	0	0	230,354
S-2018-20-0	0	0	0	0	-35,170
ATC S-2018-20-1	0	0	0	0	25,578
S-2018-29-0	5957	2122	5659	14,147	4095
S-2018-30-0	5957	2122	5659	14,147	4095
SSPE2	11,914	4244	11 318	28,294	228,952

#### 5 Major Source Determination

##### Rule 2201 Major Source Determination

Pursuant to District Rule 2201, a Major Source is a stationary source with a SSPE2 equal to or exceeding one or more of the following threshold values For the purposes of determining major source status the following shall not be included

- any ERCs associated with the stationary source
- Emissions from non-road IC engines (i.e. IC engines at a particular site at the facility for less than 12 months)
- Fugitive emissions, except for the specific source categories specified in 40 CFR 51.165

Rule 2201 Major Source Determination (lb/year)					
	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
Facility emissions pre-project	0	0	0	0	0
Facility emissions – post project	11,914	4244	11,318	28,294	228,952
Major Source Threshold	20,000	140,000	140 000	200 000	20 000
Major Source?	No	No	No	No	yes

As seen in the table above, the facility is an existing Major Source for VOC and will remain a Major Source for VOC

##### Rule 2410 and Federal Major Source Determination

For this determination the traditional stationary source definition shall be used, the area wide stationary source definition shall not be used

The proposed steam generators are located is on property that is non-contiguous or adjacent to other Crimson property (see map in Appendix D) The subject property only includes the two proposed steam generators

The facility or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b)(1)(i) Therefore the following PSD Major Source thresholds are applicable

PSD Major Source Determination (tons/year)							
	NO <sub>2</sub>	VOC	SO <sub>2</sub>	CO	PM	PM <sub>10</sub>	CO <sub>2e</sub>
Estimated Facility PE before Project Increase	0	0	0	0	0	0	0
PSD Major Source Thresholds	250	250	250	250	250	250	100 000
PSD Major Source ? (Y/N)	n	n	n	n	n	n	n

As shown above, the facility is not an existing major source for PSD for at least one pollutant Therefore the facility is not an existing major source for PSD

Federal Major Source Determination (lb/year)					
	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
Facility emissions pre project	0	0	0	0	0
Facility emissions – post project	11,914	4244	11,318	28,294	8190
Major Source Threshold	20 000	140 000	140,000	200 000	20,000
Major Source?	No	No	No	No	No

As shown above, the facility is not an existing Federal Major Source

The modification to tank S-2018-20 does not result in a SB 288 or Federal Major Modification, or result in a PSD significant emission increase Therefore, it is not necessary to determine whether the tank s Federal stationary source is a Major Source

## 6 Baseline Emissions (BE)

The BE calculation (in lbs/year) is performed pollutant-by-pollutant for each unit within the project to calculate the QNEC and if applicable, to determine the amount of offsets required

Pursuant to District Rule 2201, BE = PE1 for

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, located at a Major Source

otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to District Rule 2201

Therefore BE=PE1

Since S-2018-29-0 and '30-0 are new emissions units, their BE = PE1 = 0 for all pollutants

#### **a BE VOC**

Pursuant to Rule 2201, a Clean Emissions Unit is defined as an emissions unit that is "equipped with an emissions control technology with a minimum control efficiency of at least 95% or is equipped with emission control technology that meets the requirements for achieved-in-practice BACT as accepted by the APCO during the five years immediately prior to the submission of the complete application

Tank S-2018-20-1 is equipped with a PV vent, which meets Achieved in Practice BACT requirements Therefore, BE = PE1

#### **7 SB 288 Major Modification**

Since this facility is not a major source for any of the pollutants addressed in this project this project does not constitute an SB 288 major modification

#### **8 Federal Major Modification**

Since this facility is not a Federal Major Source for any pollutants, this project does not constitute a Federal Major Modification Additionally, since the facility is not a major source for PM<sub>10</sub> (140,000 lb/year), it is not a major source for PM<sub>2.5</sub> (200,000 lb/year)

#### **9 Rule 2410 – Prevention of Significant Deterioration (PSD) Applicability Determination**

Rule 2410 applies to pollutants for which the District is in attainment or for unclassified, pollutants The pollutants addressed in the PSD applicability determination are listed as follows

- NO<sub>2</sub> (as a primary pollutant)
- SO<sub>2</sub> (as a primary pollutant)
- CO
- PM
- PM<sub>10</sub>
- Greenhouse gases (GHG) CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>, HFCs, PFCs, and SF<sub>6</sub>

The first step of this PSD evaluation consists of determining whether the facility is an existing PSD Major Source or not (See Section VII C 5 of this document)

In the case the facility is an existing PSD Major Source, the second step of the PSD evaluation is to determine if the project results in a PSD significant increase



In the case the facility is NOT an existing PSD Major Source but is an existing source, the second step of the PSD evaluation is to determine if the project, by itself, would be a PSD major source

In the case the facility is new source, the second step of the PSD evaluation is to determine if this new facility will become a new PSD major Source as a result of the project and if so, to determine which pollutant will result in a PSD significant increase

**Potential to Emit for New or Modified Emission Units vs PSD Major Source Thresholds**

As a screening tool, the project potential to emit from all new and modified units is compared to the PSD major source threshold, and if total project potential to emit from all new and modified units is below this threshold, no further analysis will be needed

The facility or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b)(1)(i). Therefore the following PSD Major Source thresholds are applicable

PSD Major Source Determination Potential to Emit (tons/year)							
	NO2	VOC	SO2	CO	PM	PM10	CO2e
Total PE from New and Modified Units	6.0	11.4	1.9	14.1	5.7	5.7	87.118
PSD Major Source threshold	250	250	250	250	250	250	100,000
New PSD Major Source?	n	n	n	n	n	n	n

As shown in the table above, the project potential to emit, by itself, does not exceed any of the PSD major source thresholds. Therefore Rule 2410 is not applicable and no further discussion is required.

**10 Quarterly Net Emissions Change (QNEC)**

The QNEC is calculated solely to establish emissions that are used to complete the District's PAS emissions profile screen. Detailed QNEC calculations are included in Appendix A.

**VIII Compliance**

**Rule 2201 New and Modified Stationary Source Review Rule**

**A Best Available Control Technology (BACT)**

**1 BACT Applicability**

BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis. Unless specifically exempted by Rule 2201, BACT shall be required for the following actions\*

- a Any new emissions unit with a potential to emit exceeding two pounds per day,
- b The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,
- c Modifications to an existing emissions unit with a valid Permit to Operate resulting in an AIPE exceeding two pounds per day, and/or
- d Any new or modified emissions unit, in a stationary source project, which results in an SB 288 Major Modification or a Federal Major Modification, as defined by the rule

\*Except for CO emissions from a new or modified emissions unit at a Stationary Source with an SSPE2 of less than 200 000 pounds per year of CO

**a New emissions units – PE > 2 lb/day**

As seen in Section VII C 2 above, the applicant is proposing to install two new steam generators each with a PE greater than 2 lb/day for NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub>, CO, and VOC. BACT is triggered for NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub>, CO and VOC for the steam generators. However BACT is not triggered for CO since the SSPE2 for CO is not greater than 200 000 lbs/year, as demonstrated in Section VII C 5 above.

**b Relocation of emissions units – PE > 2 lb/day**

As discussed in Section I above, there are no emissions units being relocated from one stationary source to another, therefore BACT is not triggered.

**c Modification of emissions units – AIPE > 2 lb/day**

$$\text{AIPE} = \text{PE}_2 - \text{HAPE}$$

Where,

AIPE = Adjusted Increase in Permitted Emissions, (lb/day)

PE<sub>2</sub> = Post-Project Potential to Emit (lb/day)

HAPE = Historically Adjusted Potential to Emit, (lb/day)

$$\text{HAPE} = \text{PE}_1 \times (\text{EF}_2/\text{EF}_1)$$

Where

PE<sub>1</sub> = The emissions unit's PE prior to modification or relocation, (lb/day)

EF<sub>2</sub> = The emissions unit's permitted emission factor for the pollutant after modification or relocation. If EF<sub>2</sub> is greater than EF<sub>1</sub> then EF<sub>2</sub>/EF<sub>1</sub> shall be set to 1.

EF<sub>1</sub> = The emissions unit's permitted emission factor for the pollutant before the modification or relocation.

$$\text{AIPE} = \text{PE}_2 - (\text{PE}_1 * (\text{EF}_2 / \text{EF}_1))$$

Tank S-2018-20-1

$$EF1 = EF2$$

$$\begin{aligned} AIPE &= 107.2 - (147.4 * (1)) \\ &= 107.2 - 147.4 \\ &= -40.2 \text{ lb/day} \\ &= 0.0 \text{ lb/day} \end{aligned}$$

As demonstrated above, the AIPE is not greater than 2.0 lb/day for the tank, therefore BACT is not triggered

#### **d SB 288/Federal Major Modification**

As discussed in Sections VII C 7 and VII C 8 above, this project does not constitute a SB 288 or Federal Major Modification. Therefore BACT is not triggered

## **2 BACT Guideline**

Please note that BACT Guideline 1.2.1 [Steam Generator ( $\geq 5$  MMBtu/hr, Oilfield)] has been rescinded. The  $\text{NO}_x$  emission limit requirement of District Rule 4320 is lower than the Achieved-in-Practice requirement of BACT Guideline 1.2.1 (14 ppmv @ 3%  $\text{O}_2$ ); therefore, a project specific BACT analysis will be performed to determine BACT for this project. More details regarding this are provided in Appendix E.

## **3 Top-Down BACT Analysis**

Per Permit Services Policies and Procedures for BACT, a Top-Down BACT analysis shall be performed as a part of the application review for each application subject to the BACT requirements pursuant to the District's NSR Rule.

Pursuant to the attached Top-Down BACT Analysis (see Appendix E), BACT has been satisfied with the following:

$\text{NO}_x$	7 ppmvd @ 3% $\text{O}_2$
$\text{SO}_x$	Natural gas treated to remove 95% by weight of sulfur compounds
$\text{PM}_{10}$	Natural gas treated to remove 95% by weight of sulfur compounds
VOC	Gaseous fuel

## **B Offsets**

### **1 Offset Applicability**

Offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the SSPE2 equals to or exceeds the offset threshold levels in Table 4-1 of Rule 2201.

The SSPE2 is compared to the offset thresholds in the following table:

Offset Determination (lb/year)					
	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
Post Project SSPE (SSPE2)	11,914	4244	11,318	28,294	228,952
Offset Threshold	20,000	54,750	29,200	200,000	20,000
Offsets triggered?	n	n	n	n	y

## 2 Quantity of Offsets Required

As seen above, the facility is an existing Major Source for VOC and the SSPE2 is greater than the offset threshold. Therefore offset calculations will be required for this project.

The quantity of offsets in pounds per year for VOC is calculated as follows for sources with an SSPE1 greater than the offset threshold levels before implementing the project being evaluated:

Offsets Required (lb/year) =  $(\Sigma[PE2 - BE] + ICCE) \times DOR$ , for all new or modified emissions units in the project,

Where,

PE2 = Post Project Potential to Emit, (lb/year)

BE = Baseline Emissions, (lb/year)

ICCE = Increase in Cargo Carrier Emissions, (lb/year)

DOR = Distance Offset Ratio, determined pursuant to Section 4.8

BE = PE1 for

- Any unit located at a non-Major Source
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, Located at a Major Source

otherwise,

BE = HAE

As shown in section VII C 6 above, tank S-2018-20 is a Clean Emission Unit, therefore its BE equals PE1.

Steam generators S-2018-29 and '30 are new, therefore, their PE1s equal zero.

Also, there are no increases in cargo carrier emissions. Therefore offsets can be determined as follows:

Offsets Required (lb/year) =  $([PE2 - BE] + ICCE) \times DOR$

PE2 (VOC) = 4095 + 4095 + 25,578 lb/year

BE (VOC) = 35,768 lb/year

ICCE = 0 lb/year

$$\begin{aligned}\text{Offsets Required (lb/year)} &= ([4095 + 4095 + 25,578 - 35,170] + 0) \times \text{DOR} \\ &= -1402 \text{ lb VOC/year} \\ &= 0 \text{ lb VOC/year}\end{aligned}$$

As demonstrated in the calculation above, the amount of offsets is zero. Therefore, offsets will not be required for this project.

## **C Public Notification**

### **1 Applicability**

Public noticing is required for

- a New Major Sources, Federal Major Modifications, and SB 288 Major Modifications,
- b Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
- c Any project which results in the offset thresholds being surpassed, and/or
- d Any project with an SSPE of greater than 20,000 lb/year for any pollutant

#### **a New Major Sources, Federal Major Modifications, and SB 288 Major Modifications**

New Major Sources are new facilities, which are also Major Sources. Since this is not a new facility, public noticing is not required for this project for New Major Source purposes.

As demonstrated in Sections VII C 7 and VII C 8, this project does not constitute an SB 288 or Federal Major Modification, therefore, public noticing for SB 288 or Federal Major Modification purposes is not required.

#### **b PE > 100 lb/day**

Applications which include a new emissions unit with a PE greater than 100 pounds during any one day for any pollutant will trigger public noticing requirements. As seen in Section VII C 2 above, this project does not include a new emissions unit which has daily emissions greater than 100 lb/day for any pollutant, therefore public noticing for PE > 100 lb/day purposes is not required.

#### **c Offset Threshold**

The SSPE1 and SSPE2 are compared to the offset thresholds in the following table.

<b>Offset Thresholds</b>				
<b>Pollutant</b>	<b>SSPE1 (lb/year)</b>	<b>SSPE2 (lb/year)</b>	<b>Offset Threshold</b>	<b>Public Notice Required?</b>
NO <sub>x</sub>	0	11,914	20,000 lb/year	No
SO <sub>x</sub>	0	4244	54,750 lb/year	No
PM <sub>10</sub>	0	11,318	29,200 lb/year	No
CO	0	28,294	200,000 lb/year	No
VOC	230,354	228,952	20,000 lb/year	No

As detailed above, there were no thresholds surpassed with this project, therefore public noticing is not required for offset purposes

**d SSIPE > 20,000 lb/year**

Public notification is required for any permitting action that results in a SSIPE of more than 20,000 lb/year of any affected pollutant. According to District policy, the SSIPE = SSPE2 – SSPE1. The SSIPE is compared to the SSIPE Public Notice thresholds in the following table.

SSIPE Public Notice Thresholds					
Pollutant	SSPE1 (lb/year)	SSPE2 (lb/year)	SSIPE (lb/year)	SSIPE Public Notice Threshold	Public Notice Required?
NO <sub>x</sub>	0	11,914	11,914	20,000 lb/year	No
SO <sub>x</sub>	0	4244	4244	20,000 lb/year	No
PM <sub>10</sub>	0	11,318	11,318	20,000 lb/year	No
CO	0	28,294	28,294	20,000 lb/year	Yes
VOC	230,354	228,952	-1402	20,000 lb/year	No

As demonstrated above, the SSIPE for CO was greater than 20,000 lb/year, therefore public noticing for SSIPE purposes is required.

**2 Public Notice Action**

As discussed above, public noticing is required for this project for having a greater than 20,000 lb/yr CO increase. Therefore, public notice documents will be submitted to the California Air Resources Board (CARB) and a public notice will be published in a local newspaper of general circulation prior to the issuance of the ATC for this equipment.

**D Daily Emission Limits (DELs)**

DELs and other enforceable conditions are required by Rule 2201 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. The DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis. DELs are also required to enforce the applicability of BACT.

**Proposed Rule 2201 (DEL) Conditions**

S-2018-20-1

- This tank shall only store, place, or hold organic liquid with a true vapor pressure (TVP) of less than 8.0 psia under all storage conditions. [District Rule 2201] N
- Crude oil throughput shall not exceed 50 bbl/day based on a monthly average. [District Rules 2201] N
- Daily VOC emissions shall not exceed 107.2 lb/day. [District Rule 2201] N

S-2018-29-0 and '30-0

- Except for periods of startup and shutdown, emissions from the natural gas-fired unit shall not exceed any of the following limits 7 ppmvd NO<sub>x</sub> @ 3% O<sub>2</sub> or 0.008 lb-NO<sub>x</sub>/MMBtu 0.0076 lb-PM<sub>10</sub>/MMBtu 35 ppmvd CO @ 3% O<sub>2</sub> or 0.026 lb-CO/MMBtu, or 0.0055 lb-VOC/MMBtu [District Rules 2201, 4305, 4306, 4320 and 4801]

## **E Compliance Assurance**

### **1 Source Testing**

Source testing is not required for the tank to demonstrate compliance with Rule 2201

The steam generators are subject to District Rule 4305, *Boilers, Steam Generators and Process Heaters, Phase 2*, District Rule 4306, *Boilers, Steam Generators and Process Heaters, Phase 3*, and District Rule 4320 *Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr*. Source testing requirements, in accordance with District Rules 4305, 4306, and 4320 will be discussed in Section VIII, District Rule 4320 of this evaluation.

### **2 Monitoring**

Monitoring is not required for the tank to demonstrate compliance with Rule 2201

As required by District Rule 4305, *Boilers, Steam Generators and Process Heaters, Phase 2*, District Rule 4306, *Boilers, Steam Generators and Process Heaters, Phase 3*, and District Rule 4320 *Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr*, this unit is subject to monitoring requirements. Monitoring requirements, in accordance with District Rules 4305, 4306, and 4320 will be discussed in Section VIII, District Rule 4320 of this evaluation.

### **3 Recordkeeping**

S-2018-20-1

- Permittee shall maintain monthly records of average daily crude oil throughput and shall keep accurate records of each organic liquid stored in the tank, including its storage temperature, TVP, and API gravity [District Rules 2201 and 4623] N
- All records shall be maintained for a period of at least five years and shall be made readily available for District inspection upon request [District Rules 2201 and 4623] N

As required by District Rule 4305, *Boilers, Steam Generators and Process Heaters, Phase 2*, District Rule 4306, *Boilers, Steam Generators and Process Heaters, Phase 3*, and District Rule 4320 *Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr*, this unit is subject to recordkeeping requirements. Recordkeeping requirements, in accordance with District Rules 4305, 4306, and 4320 will be discussed in Section VIII, District Rule 4320 of this evaluation.

#### **4 Reporting**

No reporting is required to demonstrate compliance with Rule 2201

#### **F Ambient Air Quality Analysis (AAQA)**

An AAQA shall be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard. The District's Technical Services Division conducted the required analysis. Refer to **Appendix G** of this document for the AAQA summary sheet.

The proposed location is in an attainment area for NO<sub>x</sub>, CO, and SO<sub>x</sub>. As shown by the AAQA summary sheet, the proposed equipment will not cause a violation of an air quality standard for NO<sub>x</sub>, CO, or SO<sub>x</sub>.

The proposed location is in a non-attainment area for the state's PM<sub>10</sub> as well as federal and state PM<sub>2.5</sub> thresholds. As shown by the AAQA summary sheet, the proposed equipment will not cause a violation of an air quality standard for PM<sub>10</sub> and PM<sub>2.5</sub>.

#### **Rule 2410 Prevention Of Significant Deterioration**

As shown above in section VII C 9, PSD requirements are not triggered for this project, therefore, no further discussion is required.

#### **Rule 2520 Federally Mandated Operating Permits**

Pursuant to their current operating permit, this facility is an existing major source, however, the facility has not received their Title V permit.

#### **Rule 4001 New Source Performance Standards (NSPS)**

##### Steam Generators

40 CFR Part 60, Subpart Dc applies to Small Industrial-Commercial-Industrial Steam Generators between 10 MMBtu/hr and 100 MMBtu/hr (post-6/9/89 construction, modification or, reconstruction).

The subject steam generators have a rating of 85 MMBtu/hr and are fired on natural/TEOR gas. Subpart Dc has no standards for gas-fired steam generators. Therefore, the subject steam generators are not an affected facility and subpart Dc does not apply.

##### Tank

40 CFR Part 60, Subparts K, Ka, and Kb could potentially apply to the storage tank. However, pursuant to 40 CFR 60.110 (b), 60.110(a) (b), and 60.110(b) (b), these subparts do not apply to storage vessels less than 10,000 bbls, used for petroleum or condensate, that is stored, processed and/or treated at a drilling and production facility prior to custody transfer.

40 CFR Part 60, Subpart OOOO—Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution (constructed, reconstructed, or modified after 8/23/11) applies to single storage vessel, located in the oil and natural gas production segment, natural gas processing segment or natural gas transmission and storage segment. The subject tank was installed prior to 8/23/11 and has not been reconstructed or modified (pursuant to 60.14(e)(2) (lowering the TVP limit is not an NSPS modification) after 8/23/11).



Therefore, the requirements of 40 CFR Part 60 Subpart OOOO are not applicable to this project

#### **Rule 4101 Visible Emissions**

Rule 4101 states that no air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity

As long as the equipment is properly maintained and operated, compliance with visible emissions limits is expected under normal operating conditions

#### **Rule 4102 Nuisance**

Rule 4102 prohibits discharge of air contaminants which could cause injury, detriment nuisance or annoyance to the public. Public nuisance conditions are not expected as a result of these operations, provided the equipment is well maintained. Therefore, compliance with this rule is expected.

#### **California Health & Safety Code 41700 (Health Risk Assessment)**

District Policy APR 1905 – *Risk Management Policy for Permitting New and Modified Sources* specifies that for an increase in emissions associated with a proposed new source or modification, the District perform an analysis to determine the possible impact to the nearest resident or worksite.

An HRA is not required for a project with a total facility prioritization score of less than or equal to one. According to the Technical Services Memo for this project (**Appendix F**), the total facility prioritization score including this project was less than or equal to one. Therefore, no future analysis is required to determine the impact from this project and compliance with the District's Risk Management Policy is expected.

#### **Discussion of T-BACT**

BACT for toxic emission control (T-BACT) is required if the cancer risk exceeds one in one million. As demonstrated above, T-BACT is not required for this project because the HRA indicates that the risk is not above the District's thresholds for triggering T-BACT requirements, therefore, compliance with the District's Risk Management Policy is expected.

#### **Rule 4201 Particulate Matter Concentration**

Section 3.1 prohibits discharge of dust, fumes, or total particulate matter into the atmosphere from any single source operation in excess of 0.1 grain per dry standard cubic foot.

F-Factor for NG 8,578 dscf/MMBtu at 60 °F  
PM<sub>10</sub> Emission Factor 0.005 lb-PM<sub>10</sub>/MMBtu  
Percentage of PM as PM<sub>10</sub> in Exhaust 100%  
Exhaust Oxygen (O<sub>2</sub>) Concentration 3%

$$\text{Excess Air Correction to F Factor} = \frac{20.9}{(20.9 - 3)} = 1.17$$

$$GL = \left( \frac{0.0076 \text{ lb-PM}}{\text{MMBtu}} \times \frac{7,000 \text{ grain}}{\text{lb-PM}} \right) / \left( \frac{8,578 \text{ ft}^3}{\text{MMBtu}} \times 1.17 \right)$$

$$GL = 0.005 \text{ grain/dscf} < 0.1 \text{ grain/dscf}$$

Therefore, compliance with the requirements of this rule is expected.

### **Rule 4301 Fuel Burning Equipment**

Rule 4301 limits air contaminant emissions from fuel burning equipment as defined in the rule. Section 3.1 defines fuel burning equipment as "any furnace, boiler, apparatus, stack, and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer".

Section 5.0 gives the requirements of the rule.

A person shall not discharge into the atmosphere combustion contaminants exceeding in concentration at the point of discharge, 0.1 grain per cubic foot of gas calculated to 12% of carbon dioxide at dry standard conditions.

A person shall not build, erect, install or expand any non-mobile fuel burning equipment unit unless the discharge into the atmosphere of contaminants will not and does not exceed any one or more of the following rates:

- 200 pound per hour of sulfur compounds, calculated as sulfur dioxide (SO<sub>2</sub>)
- 140 pounds per hour of nitrogen oxides, calculated as nitrogen dioxide (NO<sub>2</sub>)
- Ten pounds per hour of combustion contaminants as defined in Rule 1020 and derived from the fuel.

District Rule 4301 Limits			
	NO <sub>2</sub>	Total PM	SO <sub>2</sub>
	0.008 x 85 = 0.68	0.0076 x 85 = 0.65	0.00285 x 85 = 0.24
Rule Limit (lb/hr)	140	10	200

The particulate emissions from the steam generators will not exceed 0.1 gr/dscf at 12% CO<sub>2</sub> or 10 lb/hr. Further, the emissions of SO<sub>x</sub> and NO<sub>x</sub> will not exceed 200 lb/hr or 140 lb/hr, respectively.

Therefore, compliance with the requirements of this rule is expected.

### **District Rule 4305 Boilers, Steam Generators and Process Heaters – Phase 2**

The unit is natural gas-fired with a maximum heat input of 20.0 MMBtu/hr. Pursuant to Section 2.0 of District Rule 4305, the unit is subject to District Rule 4305, *Boilers, Steam Generators and Process Heaters – Phase 2*.

In addition, the unit is also subject to District Rule 4306, *Boilers, Steam Generators and Process Heaters – Phase 3*.

Since emissions limits of District Rule 4320 and all other requirements are equivalent or more stringent than District Rule 4305 requirements, compliance with District Rule 4320 requirements will satisfy requirements of District Rule 4305.

### **District Rule 4306 Boilers, Steam Generators and Process Heaters – Phase 3**

The unit is natural gas-fired with a maximum heat input of 20.0 MMBtu/hr. Pursuant to Section 2.0 of District Rule 4306, the unit is subject to District Rule 4306, *Boilers, Steam Generators and Process Heaters – Phase 3*.

Since emissions limits of District Rule 4320 and all other requirements are equivalent or more stringent than District Rule 4306 requirements, compliance with District Rule 4320 requirements will satisfy requirements of District Rule 4306.

### **Rule 4320 – Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr**

#### **Section 5.0 Requirements**

Section 5.1 of the rule requires compliance with the NO<sub>x</sub> and CO emissions limits listed in Table 1 of Section 5.2 or payment of an annual emissions fee to the District as specified in Section 5.3 and compliance with the control requirements specified in Section 5.4; or as stated in Section 5.1.3, comply with the applicable Low-use Unit requirements of Section 5.5.

#### **Section 5.2 NO<sub>x</sub> and CO Emission Limits**

##### **C. Oilfield Steam Generators**

Rule 4320 Emissions Limits				
Category	Operated on gaseous fuel		Operated on liquid fuel	
	NO <sub>x</sub> Limit	CO Limit	NO <sub>x</sub> Limit	CO Limit
1. Units with a total rated heat input >20.0 MMBtu/hr	Standard Schedule 7 ppmv or 0.008 lb/MMBtu; or	400 ppmv @ 3% O <sub>2</sub>	40 ppmv or 0.052 lb/MMBtu	400 ppmv @ 3% O <sub>2</sub>
	Staged Enhanced Schedule Initial limit: 9 ppmv @ 3% O <sub>2</sub> , 0.011 lb/MMBtu			
	Final limit: 5 ppmv @ 3% O <sub>2</sub> , 0.0062 lb/MMBtu			

- The proposed NO<sub>x</sub> emission factor is 7 ppmv.

Therefore, compliance with Section 5.1 of District Rule 4320 is expected.

A permit condition listing the emissions limits will be listed on permits as shown in the DEL section above

### **Section 5 3 Annual Fee Calculation**

Applicant has proposed to meet the emissions limits requirements of Section 5 1 and therefore this section is not applicable

### **Section 5 4 Particulate Matter Control Requirements**

Section 5 4 of the rule requires one of four options for control of particulate matter 1) combustion of PUC-quality natural gas, commercial propane, butane, or liquefied petroleum gas, or a combination of such gases, 2) limit fuel sulfur content to no more than five (5) grains of total sulfur per one hundred (100) standard cubic, 3) install and properly operate an emission control system that reduces SO<sub>2</sub> emissions by at least 95% by weight, or limit exhaust SO<sub>2</sub> to less than or equal to 9 ppmv corrected to 3 0% O<sub>2</sub> or 4) refinery units, which require modification of refinery equipment to reduce sulfur emissions, shall be in compliance with the applicable requirement in Section 5 4 1 no later than July 1, 2013

The units have a sulfur emission limit of 0 00285 lb SO<sub>2</sub>/MMBtu (1 0 gr S/100scf) and are authorized to combust natural/TEOR gas

Therefore the units are in compliance with the SO<sub>x</sub>/PM<sub>10</sub> requirements of Section 5 4 1 2 of the rule which states the following

*5 4 1 2 On and after the applicable NO<sub>x</sub> Compliance Deadline specified in Section 5 2 Table 1, operators shall limit fuel sulfur content to no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet*

Compliance with the rule is expected

### **Section 5 5 Low Use**

Section 5 5 requires that units limited to less than or equal to 1 8 billion Btu per calendar year heat input pursuant to a District Permit to Operate Tune the unit at least twice per calendar year, or if the unit does not operate throughout a continuous six-month period within a calendar year, only one tune-up is required for that calendar year No tune-up is required for any unit that is not operated during that calendar year, this unit may be test fired to verify availability of the unit for its intended use, but once the test firing is completed the unit shall be shutdown, or operate the unit in a manner that maintains exhaust oxygen concentrations at less than or equal to 3 00 percent by volume on a dry basis

The subject steam generators are not low use units and therefore the requirements of Section 5 5 do not apply

### **Section 5 6, Startup and Shutdown Provisions**

Applicable emissions limits are not required during startup and shutdown provided the duration of each start-up or each shutdown shall not exceed two hours, the emission control system shall be in operation and emissions shall be minimized insofar as technologically

feasible during start-up or shutdown or operator has submitted an application for a Permit to Operate condition to allow more than two hours for each start-up or each shutdown provided the operator meets all of the conditions specified in Sections 5 6 3 1 through 5 6 3 3. The following conditions are included on the ATCs to address the startup and shutdown emissions:

Duration of start up and shutdown shall not exceed 2 hours each per occurrence [District Rules 2201, 4305, 4306, and 4320]

Maximum NO<sub>x</sub> emissions from the steam generator including start up and shutdown shall not exceed 19.7 lb-NO<sub>x</sub>/day [District Rule 2201]

## **Section 5.7, Monitoring Provisions**

Section 5.7 requires either use of an APCO approved Continuous Emissions Monitoring System (CEMS) for NO<sub>x</sub>, CO, and oxygen, or implementation of an APCO-approved Alternate Monitoring System consisting of:

- 5.7.1.1 Periodic NO<sub>x</sub> and CO exhaust emission concentrations,
- 5.7.1.2 Periodic exhaust oxygen concentration,
- 5.7.1.3 Flow rate of reducing agent added to exhaust,
- 5.7.1.4 Catalyst inlet and exhaust temperature,
- 5.7.1.5 Catalyst inlet and exhaust oxygen concentration,
- 5.7.1.6 Periodic flue gas recirculation rate, or
- 5.7.1.7 Other operational characteristics

In order to satisfy the requirements of District Rule 4320, the applicant has proposed to use pre-approved alternate monitoring scheme A (pursuant to District Policy SSP-1105), which requires that monitoring of NO<sub>x</sub>, CO, and O<sub>2</sub> exhaust concentrations shall be conducted at least once per month (in which a source test is not performed) using a portable analyzer. The following conditions will be incorporated into the permits in order to ensure compliance with the requirements of the proposed alternate monitoring plan:

- {4063} The permittee shall monitor and record the stack concentration of NO<sub>x</sub>, CO, and O<sub>2</sub> at least once every month (in which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e., the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month [District Rules 4305, 4306, and 4320].
- {4064} If either the NO<sub>x</sub> or CO concentrations corrected to 3% O<sub>2</sub> as measured by the portable analyzer exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition [District Rules 4305, 4306, and 4320].
- {4065} All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the permit-to-operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive minute period by either taking a cumulative 15 consecutive-minute

sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period [District Rules 4305 4306, and 4320]

- {4066} The permittee shall maintain records of (1) the date and time of NO<sub>x</sub> CO and O<sub>2</sub> measurements (2) the O<sub>2</sub> concentration in percent by volume and the measured NO<sub>x</sub> and CO concentrations corrected to 3% O<sub>2</sub> (3) make and model of exhaust gas analyzer (4) exhaust gas analyzer calibration records and (5) a description of any corrective action taken to maintain the emissions within the acceptable range [District Rules 4305 4306, and 4320]

## **5 7 6 Monitoring SO<sub>x</sub> Emissions**

Section 5 7 6 1 Operators complying with Sections 5 4 1 1 or 5 4 1 2 shall provide an annual fuel analysis to the District unless a more frequent sampling and reporting period is included in the Permit To Operate Sulfur analysis shall be performed in accordance with the test methods in Section 6 2

Section 5 7 6 2 Operators complying with Section 5 4 1 3 by installing and operating a control device with 95% SO<sub>x</sub> reduction shall propose the key system operating parameters and frequency of the monitoring and recording The monitoring option proposed shall be submitted for approval by the APCO

Section 5 7 6 3 Operators complying with Section 5 4 1 3 shall perform an annual source test unless a more frequent sampling and reporting period is included in the Permit to Operate Source tests shall be performed in accordance with the test methods in Section 6 2

### **Sulfur Monitoring**

The following conditions will be included on the ATCs

PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one fourth (0 25) grain of hydrogen sulfide per one hundred (100) standard cubic feet no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet and at least 80% methane by volume [District Rule 4320] Y

If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source The sulfur content of the fuel shall be determined using the test methods referenced in this permit [District Rule 4320] Y

When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis permittee shall demonstrate compliance at least annually [District Rule 4320] Y

If the unit is fired on PUC-regulated natural gas valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis provided they establish the fuel sulfur concentration and higher heating value [District Rule 4320] Y

## **Section 5 8, Compliance Determination**

Section 5 8 1 requires that the operator of any unit shall have the option of complying with either the applicable heat input (lb/MMBtu) emission limits or the concentration (ppmv) emission limits specified in Section 5 2 The emission limits selected to demonstrate compliance shall be specified in the source test proposal pursuant to Rule 1081 (Source Sampling) as stated in the following ATC condition

{2976} The source plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance [District Rules 4305, 4306 and 4320]

Section 5 8 2 requires that all emissions measurements be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate Unless otherwise specified in the Permit to Operate, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3 0

{2972} All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re ignition as defined in Section 3 0 of District Rule 4306 [District Rules 4305 4306 and 4320]

Section 5 8 3 Continuous Emissions Monitoring System (CEMS) emissions measurements shall be averaged over a period of 15 consecutive minutes to demonstrate compliance with the applicable emission limits Any 15-consecutive-minute block average CEMS measurement exceeding the applicable emission limits shall constitute a violation The steam generator is not equipped with CEMs and therefore this section is not applicable

Section 5 8 4 For emissions monitoring pursuant to Sections 5 7 1, and 6 3 1 using a portable NO<sub>x</sub> analyzer as part of an APCO approved Alternate Emissions Monitoring System, emission readings shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15-consecutive-minute sample reading or by taking at least five readings evenly spaced out over the 15-consecutive-minute period

{2937} All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the permit to-operate The analyzer shall be calibrated maintained and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO Emission readings taken shall be averaged over a 15 consecutive minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings evenly spaced out over the 15 consecutive-minute period [District Rules 4305 4306 and 4320]

Section 5 8 5 For emissions source testing performed pursuant to Section 6 3 1 for the purpose of determining compliance with an applicable standard or numerical limitation of this rule, the arithmetic average of three 30-consecutive-minute test runs shall apply If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit

{2980} For emissions source testing the arithmetic average of three 30-consecutive minute test runs shall apply If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit [District Rules 4305 4306 and 4320]

## **Section 6 1 Recordkeeping**

Section 6 1 requires that the records required by Sections 6 1 1 through 6 1 5 shall be maintained for five calendar years and shall be made available to the APCO and EPA upon request Failure to maintain records or information contained in the records that demonstrate noncompliance with the applicable requirements of this rule shall constitute a violation of this rule

A permit condition will be listed on the permits as follows:

{2983} All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306, and 4320]

Section 6.1.1 requires that a unit operated under the exemption of Section 4.2 shall monitor and record, for each unit, the cumulative annual hours of operation. The units are not Section 4.2 exempt and therefore these records are not required.

Section 6.1.2 requires the operator of any unit that is subject to the requirements of Section 5.5 shall record the amount of fuel use at least on a monthly basis for each unit. On and after the applicable compliance schedule specified in Section 7.0, in the event that such unit exceeds the applicable annual heat input limit specified in Section 5.5, the unit shall be brought into full compliance with this rule as specified in Section 5.2 Table 1. The units are not low use and therefore these records are not necessary.

Section 6.1.3 The operator of any unit subject to Section 5.5.1 or Section 6.3.1 shall maintain records to verify that the required tune-up and the required monitoring of the operational characteristics of the unit have been performed.

Section 6.1.4 The operator performing start-up or shutdown of a unit shall keep records of the duration of start-up or shutdown.

Section 6.1.5 The operator of any unit firing on liquid fuel during a PUC-quality natural gas curtailment period pursuant to Section 5.4.2 shall record the sulfur content of the fuel, amount of fuel used, and duration of the natural gas curtailment period. The unit is not authorized to combust liquid fuel. Therefore this section is not applicable.

## **Section 6.2, Test Methods**

Section 6.2 identifies the following test methods as District-approved source testing methods for the pollutants listed:

Pollutant	Units	Test Method Required
NO <sub>x</sub>	ppmv	EPA Method 7E or ARB Method 100
NO <sub>x</sub>	lb/MMBtu	EPA Method 19
CO	ppmv	EPA Method 10 or ARB Method 100
Stack Gas O <sub>2</sub>	%	EPA Method 3 or 3A, or ARB Method 100
Stack Gas Velocities	ft/min	EPA Method 2
Stack Gas Moisture Content	%	EPA Method 4
Oxides of sulfur		EPA Method 6C, EPA Method 8, or ARB Method 100
Total Sulfur as Hydrogen Sulfide (H <sub>2</sub> S) Content		EPA Method 11 or EPA Method 15, as appropriate.



Sulfur Content of Liquid Fuel		ASTM D 6920-03 or ASTM D 5453-99
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The following test method conditions are included on the ATCs

{2977} NO<sub>x</sub> emissions for source test purposes shall be determined using EPA Method 7E or ARB Method 100 on a ppmv basis or EPA Method 19 on a heat input basis [District Rules 4305, 4306, and 4320]

{2978} CO emissions for source test purposes shall be determined using EPA Method 10 or ARB Method 100 [District Rules 4305 4306 and 4320]

{2979} Stack gas oxygen (O<sub>2</sub>) shall be determined using EPA Method 3 or 3A or ARB Method 100 [District Rules 4305 4306, and 4320]

Section 6 2 8 2 The SO<sub>x</sub> emission control system efficiency shall be determined using the following

$$\% \text{ Control Efficiency} = [(C_{\text{SO}_2 \text{ inlet}} - C_{\text{SO}_2 \text{ outlet}}) / C_{\text{SO}_2 \text{ inlet}}] \times 100$$

where

C<sub>SO<sub>2</sub> inlet</sub> = concentration of SO<sub>x</sub> (expressed as SO<sub>2</sub>) at the inlet side of the SO<sub>x</sub> emission control system, in lb/dscf

C<sub>SO<sub>2</sub> outlet</sub> = concentration of SO<sub>x</sub> (expressed as SO<sub>2</sub>) at the outlet side of the SO<sub>x</sub> emission control system, in lb/dscf

The units are not equipped with a SO<sub>2</sub> scrubber Therefore this section is not applicable

### **Section 6 3 Compliance Testing**

Section 6 3 1 requires that this unit be tested to determine compliance with the applicable requirements of section 5 2 not less than once every 12 months (no more than 30 days before or after the required annual source test date) Upon demonstrating compliance on two consecutive compliance source tests, the following source test may be deferred for up to thirty-six months

Section 6 3 1 1 Units that demonstrate compliance on two consecutive 12-month source tests may defer the following 12-month source test for up to 36 months (no more than 30 days before or after the required 36-month source test date) During the 36-month source testing interval, the operator shall tune the unit in accordance with the provisions of Section 5 5 1, and shall monitor, on a monthly basis, the unit's operational characteristics recommended by the manufacturer to ensure compliance with the applicable emission limits specified in Section 5 2

Section 6 3 1 2 Tune-ups required by Sections 5 5 1 and 6 3 1 do not need to be performed for units that operate and maintain an APCO approved CEMS or an APCO approved Alternate Monitoring System where the applicable emission limits are periodically monitored Applicant has proposed to monitor the emissions of NO<sub>x</sub> and CO Alternate Monitoring Scheme "A" and therefore tuning is not required

Section 6 3 1 3 If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits specified in Section 5 2, the source testing frequency shall revert to at least once every 12 months

The following conditions are included on the ATC

{109} Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test and a source test plan must be submitted for approval at least 15 days prior to testing [District Rule 1081]

{3467} Source testing to measure NOx and CO emissions from this unit while fired on natural gas shall be conducted within 60 days of initial start-up [District Rules 2201, 4305, 4306 and 4320]

{3466} Source testing to measure NOx and CO emissions from this unit while fired on natural gas shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months [District Rules 4305, 4306 and 4320]

{110} The results of each source test shall be submitted to the District within 60 days thereafter [District Rule 1081]

Sections 6.3.2.1 through 6.3.2.7 address the requirements of group testing which is not applicable for this project.

#### **Section 6.4, Emission Control Plan (ECP)**

Section 6.4.1 requires that the operator of any unit shall submit to the APCO for approval an Emissions Control Plan according to the compliance schedule in Section 7.0 of District Rule 4320.

The proposed unit will be in compliance with the emissions limits listed in Table 1, Section 5.1 of this rule and with periodic monitoring and source testing requirements. Therefore, this current application for the new proposed unit satisfies the requirements of the Emission Control Plan, as listed in Section 6.4 of District Rule 4320. No further discussion is required.

#### **Section 7.0, Compliance Schedule**

Section 7.0 indicates that an operator with multiple units at a stationary source shall comply with this rule in accordance with the schedule specified in Table 1, Section 5.2 of District Rule 4320.

The units will be in compliance with the emissions limits listed in Table 1, Section 5.2 of this rule, and periodic monitoring and source testing as required by District Rule 4320. Therefore, requirements of the compliance schedule, as listed in Section 7.1 of District Rule 4306, are satisfied. No further discussion is required.

#### **Conclusion**

Conditions are included on the ATCs in order to ensure compliance with each section of this rule, see attached draft permit(s). Therefore, compliance with District Rule 4320 requirements is expected.

#### **Rule 4623, Storage of Organic Liquids**

This rule applies to any tank with a capacity of 1,100 gallons or greater in which any organic liquid is placed, held, or stored.

According to the information provided by the applicant, CRM produces on average less than 6,000 barrels per day of crude oil from all operations within the county and does not engage in refining, transportation, or marketing of refined petroleum products. Therefore under Section 3 29 of this rule and District Rule 1020, Section 3 45, this facility is a small producer.

According to Section 4 3, except for complying with Sections 6 3 4 and 7 2, a small producer's tank with a throughput of 50 barrels of crude oil per day or less is exempt from the requirements of this rule.

The proposed tanks shall contain crude oil contents with TVP less than 0 5 psi and a throughput of less than 50 bbls of crude oil per day. Therefore, the following conditions shall be placed on the permit:

- Crude oil throughput shall not exceed 50 barrels per day based on a monthly average [District Rules 2201 & 4623] N
- Permittee shall maintain monthly records of average daily crude oil throughput and shall submit such information to the APCO 30 days prior to the expiration date indicated in the Permit to Operate [District Rules 2201 & 4623] N
- All records required to be maintained by this permit shall be maintained for a period of at least five years and shall be made readily available for District inspection upon request [District Rules 2201 & 4623] N

Compliance with the requirements of this rule is expected.

#### **Rule 4801 Sulfur Compounds**

A person shall not discharge into the atmosphere sulfur compounds, which would exist as a liquid or gas at standard conditions, exceeding in concentration at the point of discharge 0 2 % by volume calculated as SO<sub>2</sub>, on a dry basis averaged over 15 consecutive minutes. Using the ideal gas equation the sulfur compound emissions are calculated as follows:

$$\text{Volume SO}_2 = \frac{nRT}{P}$$

With

N = moles SO<sub>2</sub>

T (Standard Temperature) = 60°F = 520°R

P (Standard Pressure) = 14 7 psi

R (Universal Gas Constant) =  $\frac{10.73 \text{ psi ft}^3}{\text{lb mol } ^\circ\text{R}}$

$$\frac{0.00285 \text{ lb-SO}_x}{\text{MMBtu}} \times \frac{\text{MMBtu}}{8,578 \text{ dscf}} \times \frac{1 \text{ lb mol}}{64 \text{ lb}} \times \frac{10.73 \text{ psi ft}^3}{\text{lb mol } ^\circ\text{R}} \times \frac{520^\circ\text{R}}{14.7 \text{ psi}} \times \frac{1,000,000 \text{ parts}}{\text{million}} = 1.5 \frac{\text{parts}}{\text{million}}$$

$$\text{Sulfur Concentration} = 2.0 \frac{\text{parts}}{\text{million}} < 2,000 \text{ ppmv (or 0.2\%)}$$

Therefore, compliance with the requirements of this rule is expected.

### **California Health & Safety Code 42301.6 (School Notice)**

The District has verified that this site is not located within 1,000 feet of a school. Therefore, pursuant to California Health and Safety Code 42301.6, a school notice is not required.

### **California Environmental Quality Act (CEQA)**

CEQA requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. The District adopted its *Environmental Review Guidelines* (ERG) in 2001. The basic purposes of CEQA are to

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities,
- Identify the ways that environmental damage can be avoided or significantly reduced,
- Prevent significant avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible, and
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

### **Greenhouse Gas (GHG) Significance Determination**

It is determined that no other agency has or will prepare an environmental review document for the project. Thus the District is the Lead Agency for this project.

Facilities subject to the Cap and Trade regulation are subject to an industry-wide cap on overall GHG emissions. As such, any growth in emissions must be accounted for under that cap such that a corresponding and equivalent reduction in emissions must occur to allow any increase. Therefore, it is reasonable to conclude that implementation of the Cap and Trade program will and must fully mitigate project-specific GHG emissions.

Regardless of, and independent to, the above significance determination, the District finds that, through compliance with the Cap and Trade regulation, project-specific GHG emissions would be fully mitigated. The District therefore concludes that projects occurring at facilities subject to ARB's Cap and Trade regulation would have a less than significant individual and cumulative impact on global climate change.

Facilities with annual emissions equal to or greater than 25,000 metric tons of CO<sub>2</sub>e are required to comply with the Cap-and-Trade Program. The proposed steam generators have annual CO<sub>2</sub>e emissions greater than 25,000 metric tons and are therefore will be subject to the Cap and Trade regulation. The District therefore concludes that the project would have a less than cumulatively significant impact on global climate change.

### **District CEQA Findings**

The District is the Lead Agency for this project because there is no other agency with broader statutory authority over this project. The District performed an Engineering Evaluation (this document) for the proposed project and determined that the activity will occur at an existing facility and the project involves negligible expansion of the existing

use Furthermore, the District determined that the activity will not have a significant effect on the environment The District finds that the activity is categorically exempt from the provisions of CEQA pursuant to CEQA Guideline § 15031 (Existing Facilities), and finds that the project is exempt per the general rule that CEQA applies only to projects which have the potential for causing a significant effect on the environment (CEQA Guidelines §15061(b)(3))

#### **IX Recommendation**

Compliance with all applicable rules and regulations is expected Pending a successful NSR Public Noticing period, issue ATC S-2018-20-1, '29-0 and '30-0 subject to the permit conditions on the attached draft ATCs in **Appendix G**

#### **X Billing Information**

<b>Annual Permit Fees</b>			
<b>Permit Number</b>	<b>Fee Schedule</b>	<b>Fee Description</b>	<b>Annual Fee</b>
S-2018-20-1	3020-05S C	41,412 GALLONS	\$63
S-2018-29-0	2020-02 H	85 MMBtu/hr	\$1030
S-2018-30-0	2020-02 H	85 MMBtu/hr	\$1030

**APPENDIX A**  
**Quarterly Net Emissions Change (QNEC)**

### Quarterly Net Emissions Change (QNEC)

The Quarterly Net Emissions Change is used to complete the emission profile screen for the District's PAS database. The QNEC shall be calculated as follows:

$QNEC = PE2 - PE1$ , where

- QNEC = Quarterly Net Emissions Change for each emissions unit, lb/qtr
- PE2 = Post Project Potential to Emit for each emissions unit, lb/qtr
- PE1 = Pre-Project Potential to Emit for each emissions unit, lb/qtr

Using the values in Sections VII C 2 and VII C 6 in the evaluation above, quarterly PE2 and quarterly PE1 can be calculated as follows:

$$PE2_{\text{quarterly}} = PE2_{\text{annual}} - 4 \text{ quarters/year}$$

$$PE1_{\text{quarterly}} = PE1_{\text{annual}} - 4 \text{ quarters/year}$$

Quarterly NEC [QNEC] S-1246-20-1				
PE2 (lb-VOC/yr)	PE2 (lb-VOC qtr)	PE1 (lb-VOC /yr)	PE1 (lb-VOC /qtr)	QNEC (lb-VOC/qtr)
25,578	6395	35 170	8793	2395

Quarterly NEC [QNEC] S-1246-393-0 and '394-0 (each unit)					
	PE2 (lb/yr)	PE2 (lb/qtr)	PE1 (lb/yr)	PE1 (lb/qtr)	QNEC (lb/qtr)
NO <sub>x</sub>	5,957	1489	0	0	1489
SO <sub>x</sub>	2122	531	0	0	531
PM <sub>10</sub>	4095	1024	0	0	1024
CO	19,360	4840	0	0	4840
VOC	4,095	1024	0	0	1024

Permit # S 2018-20-1	Last Updated
Facility CRIMSON	01/23/2014 TORID
RESOURCE MANAGEMENT	

Equipment Pre Baseline NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr)	0 0	0 0	0 0	0 0	25578 0
Daily Emission Limit (lb/Day)	0 0	0 0	0 0	0 0	107 2
Quarterly Net Emissions Change (lb/Qtr)					
Q1					2395 0
Q2					2395 0
Q3					2395 0
Q4					2395 0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1					
Q2					
Q3					
Q4					



Permit # S-2018-29 0	Last Updated
Facility CRIMSON	01/27/2014 TORID
RESOURCE MANAGEMENT	

Equipment Pre-Baselined NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr)	5957 0	2122 0	5659 0	14147 0	4095 0
Daily Emis Limit (lb/Day)	13 6	5 8	15 5	38 8	11 2
Quarterly Net Emissions Change (lb/Qtr)					
Q1	1489 0	531 0	1415 0	4840 0	1024 0
Q2	1489 0	531 0	1415 0	4840 0	1024 0
Q3	1489 0	531 0	1415 0	4840 0	1024 0
Q4	1489 0	531 0	1415 0	4840 0	1024 0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1					
Q2					
Q3					
Q4					

Permit # S-2018-30-0	Last Updated
Facility CRIMSON	01/27/2014 TORID
RESOURCE MANAGEMENT	

Equipment Pre-Baselined NO

	<u>NOX</u>	<u>SOX</u>	<u>PM10</u>	<u>CO</u>	<u>VOC</u>
Potential to Emit (lb/Yr)	5957 0	212 0	5659 0	14147 0	4095 0
Daily Emis Limit (lb/Day)	13 6	5 8	15 5	38 8	11 2
Quarterly Net Emissions Change (lb/Qtr)					
Q1	1489 0	531 0	1415 0	4840 0	1024 0
Q2	1489 0	531 0	1415 0	4840 0	1024 0
Q3	1489 0	531 0	1415 0	4840 0	1024 0
Q4	1489 0	531 0	1415 0	4840 0	1024 0
Check if offsets are triggered but exemption applies	N	N	N	N	N
Offset Ratio					
Quarterly Offset Amounts (lb/Qtr)					
Q1					
Q2					
Q3					
Q4					

**APPENDIX B**  
**PTO S-2018-20-0**

# San Joaquin Valley Air Pollution Control District

PERMIT UNIT S-2018-20 0

EXPIRATION DATE 06/30/2014

SECTION SE25 TOWNSHIP 31S RANGE 22E

## EQUIPMENT DESCRIPTION

986 BBL FIXED ROOF STORAGE TANK

## PERMIT UNIT REQUIREMENTS

---

- 1 No air contaminant shall be released into the atmosphere which causes a public nuisance [District Rule 4102]
- 2 No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than Ringelmann 1 or 20% opacity [District Rule 4101]
- 3 Permittee's crude oil production shall average less than 6,000 bbl/day from all operations within Kern County and permittee shall not engage in refining, transporting, or marketing of refined petroleum products [District Rule 4623]
- 4 Crude oil throughput shall not exceed 50 barrels per day based on a monthly average [District Rule 4623]
- 5 Permittee shall maintain monthly records of average daily crude oil throughput and shall submit such information to the APCO 30 days prior to the expiration date indicated in the Permit to Operate [District Rule 4623]
- 6 All records required to be maintained by this permit shall be maintained for a period of at least five years and shall be made readily available for District inspection upon request [District Rule 4623]

These terms and conditions are part of the Facility-wide Permit to Operate

Facility Name CRIMSON RESOURCE MANAGEMENT  
Location HEAVY OIL WESTERN STATIONARY SOURCE  
9-2018-20-0 Jan 23 2014 2:27PM TORIO

## **APPENDIX C**

### **Emission Calculations**

S-2018-20  
PE 1

Tank Input Data	
permit number (S-xxxx-xx-xx)	--
facility tank I.D.	--
nearest city {1: Bakersfield, 2: Fresno, 3: Stockton}	1
tank ROC vapor pressure (psia)	11
liquid bulk storage temperature, Tb (°F)	200
is this a constant-level tank? {yes, no}	no
will flashing losses occur in this tank (only if first-line tank)? {yes, no}	yes
breather vent pressure setting range (psi)	0.06
diameter of tank (feet)	21.5
capacity of tank (bbl)	986
conical or dome roof? {c, d}	c
shell height of tank (feet)	15.78
average liquid height (feet)	9
are the roof and shell the same color? {yes,no}	yes
For roof:	
color {1:Spec Al, 2:Diff Al, 3:Light, 4:Med, 5:Red, 6:White}	4
condition {1: Good, 2: Poor}	1
-----This row only used if shell is different color from roof-----	3
-----This row only used if shell is different color from roof-----	1

Liquid Input Data	A	B
maximum daily fluid throughput (bbl)		50
maximum annual fluid throughput (bbl)	6,000	6,000
maximum daily oil throughput (bbl)(used to calculate flashing loss)		50
maximum annual oil throughput (bbl)(used to calculate flashing loss)	6000	6,000
molecular weight, Mw (lb/lb-mol)		100

Calculated Values	A	B
daily maximum ambient temperature, T <sub>ax</sub> (°F)		77.65
daily minimum ambient temperature, T <sub>an</sub> (°F)		53.15
daily total solar insulation factor, I (Btu/ft <sup>2</sup> -day)		1648.9
atmospheric pressure, P <sub>a</sub> (psia)		14.47
water vapor pressure at daily maximum liquid surface temperature (T <sub>ix</sub> ), P <sub>vx</sub> (psia)	155.0	4.2359
water vapor pressure at daily minimum liquid surface temperature (T <sub>in</sub> ), P <sub>vn</sub> (psia)	144.2	3.2442
water vapor pressure at average liquid surface temperature (T <sub>ia</sub> ), P <sub>va</sub> (psia)	149.6	3.6916
roof outage, H <sub>ro</sub> (feet)		0.2240
vapor space volume, V <sub>v</sub> (cubic feet)		2542.79
paint factor, alpha		0.68
vapor density, W <sub>v</sub> (lb/cubic foot)		0.1681
daily vapor temperature range, delta T <sub>v</sub> (degrees Rankine)		49.04
vapor space expansion factor, K <sub>e</sub>		0.1669

Results	lb/year	lb/day
Standing Storage Loss	26,042	71.35
Working Loss	6,600	55.00
Flashing Loss	2,527	21.06
<b>Total Uncontrolled Tank VOC Emissions</b>	<b>35,170</b>	<b>147.4</b>

S-2018-20  
PE 2

Tank Input Data	
permit number (S-xxxx-xx-xx)	--
facility tank I.D.	--
nearest city {1: Bakersfield, 2: Fresno, 3: Stockton}	1
tank ROC vapor pressure (psia)	8
liquid bulk storage temperature, Tb (°F)	200
is this a constant-level tank? {yes, no}	no
will flashing losses occur in this tank (only if first-line tank)? {yes, no}	yes
breather vent pressure setting range (psi)	0.06
diameter of tank (feet)	21.5
capacity of tank (bbl)	986
conical or dome roof? {c, d}	c
shell height of tank (feet)	15.78
average liquid height (feet)	9
are the roof and shell the same color? {yes,no}	yes
For roof:	
color {1:Spec Al, 2:Diff Al, 3:Light, 4:Med, 5:Red, 6:White}	4
condition {1: Good, 2: Poor}	1
-----This row only used if shell is different color from roof-----	3
-----This row only used if shell is different color from roof-----	1

Liquid Input Data	A	B
maximum daily fluid throughput (bbl)		50
maximum annual fluid throughput (bbl)	6,000	6,000
maximum daily oil throughput (bbl)(used to calculate flashing loss)		50
maximum annual oil throughput (bbl)(used to calculate flashing loss)	6000	6,000
molecular weight, Mw (lb/lb-mol)		100

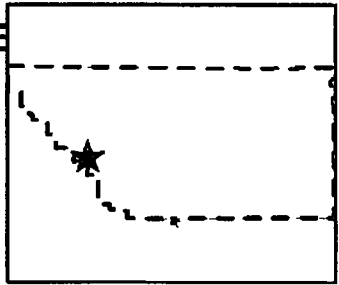
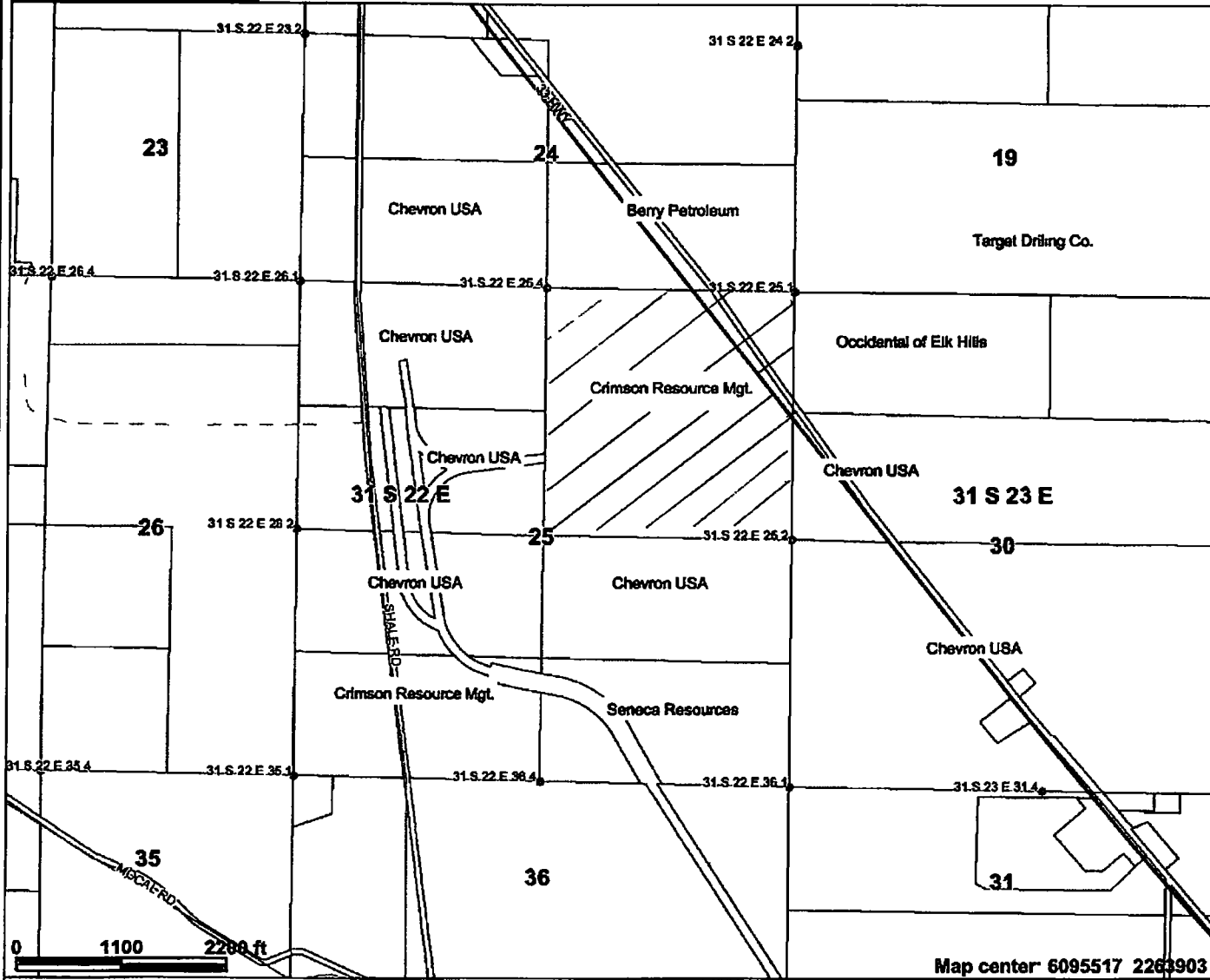
Calculated Values	A	B
daily maximum ambient temperature, T <sub>ax</sub> (°F)		77.65
daily minimum ambient temperature, T <sub>an</sub> (°F)		53.15
daily total solar insulation factor, I (Btu/ft <sup>2</sup> -day)		1648.9
atmospheric pressure, P <sub>a</sub> (psia)		14.47
water vapor pressure at daily maximum liquid surface temperature (T <sub>lx</sub> ), P <sub>vx</sub> (psia)	155.0	4.2359
water vapor pressure at daily minimum liquid surface temperature (T <sub>ln</sub> ), P <sub>vn</sub> (psia)	144.2	3.2442
water vapor pressure at average liquid surface temperature (T <sub>la</sub> ), P <sub>va</sub> (psia)	149.6	3.6916
roof outage, H <sub>ro</sub> (feet)		0.2240
vapor space volume, V <sub>v</sub> (cubic feet)		2542.79
paint factor, alpha		0.68
vapor density, W <sub>v</sub> (lb/cubic foot)		0.1223
daily vapor temperature range, delta T <sub>v</sub> (degrees Rankine)		49.04
vapor space expansion factor, K <sub>e</sub>		0.1669

Results	lb/year	lb/day
Standing Storage Loss	18,940	51.89
Working Loss	4,800	40.00
Flashing Loss	1,838	15.32
Total Uncontrolled Tank VOC Emissions	25,578	107.2

**APPENDIX D**  
**Rule 2410 and 40 CFR 51 165**  
**Major Source Determination Maps**



# **Crimson Res Mgt Surrounding Property Sec 25 31S/22E**



- Legend**
- Section Corners
  - Roads**
    - /// Arterial
    - /// Collector
    - /// Highway
    - /// Local
    - /// Ramp
    - Unpaved
  - County of Kern
  - Assessment Parcels
  - Townships
  - Sections

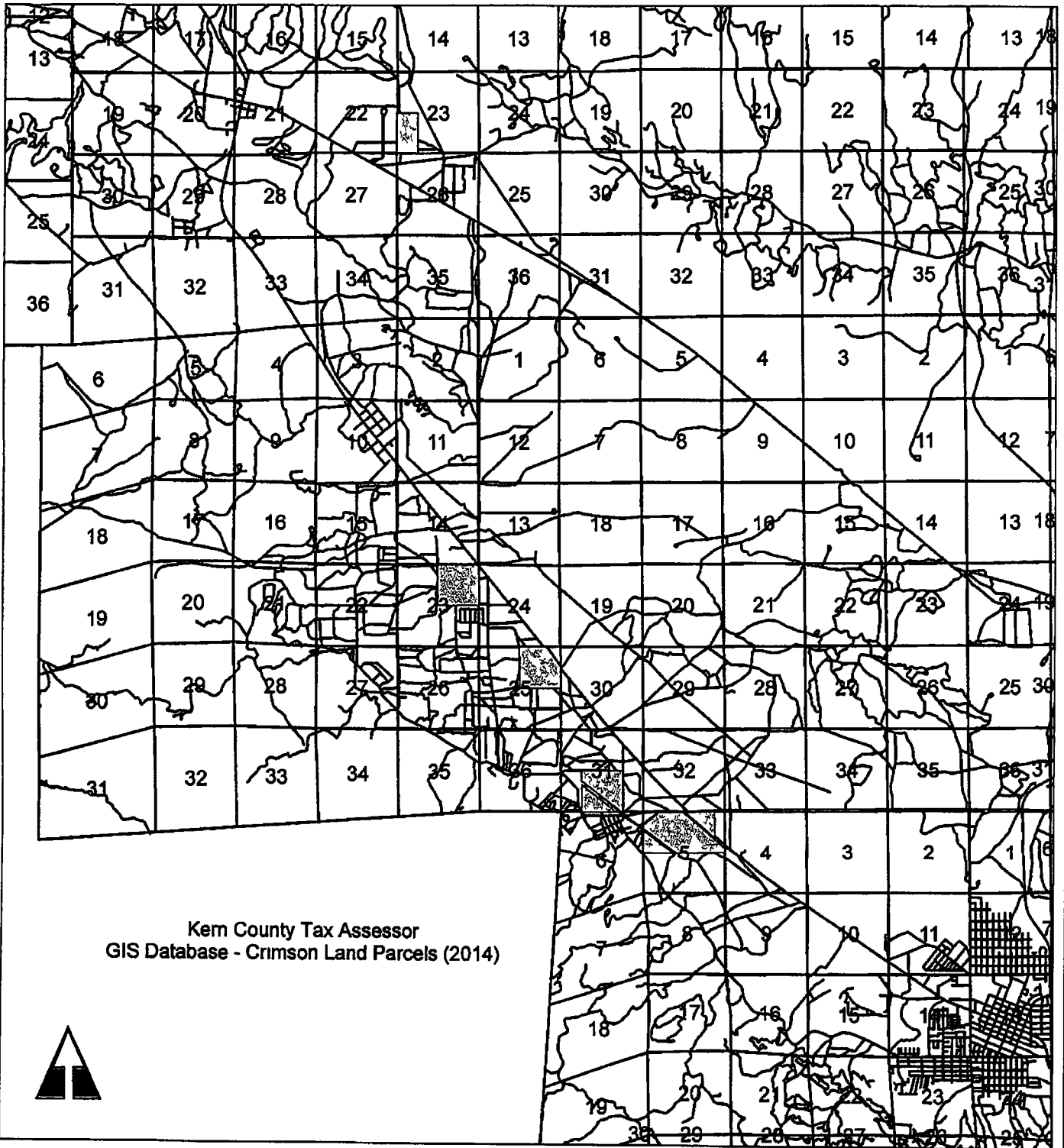


Map center: 6095517 2263903

Scale 1 19 578

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

# Crimson Resource Management Property Within the Midway Sunset Oilfield



**Figure-1**

**Crimson Property  
Within the Vicinity of the Project**



**Vector Environmental, Inc**

Drawn By M V Kelly

Date 02/2014

## **APPENDIX E**

### **BACT Analyses**

## **Steam Generator Top Down BACT Analysis**

Oxides of nitrogen (NO<sub>x</sub>) are generated from the high temperature combustion of the natural gas fuel. A majority of the NO<sub>x</sub> emissions are formed from the high temperature reaction of nitrogen and oxygen in the inlet air. The rest of the NO<sub>x</sub> emissions are formed from the reaction of fuel-bound nitrogen with oxygen in the inlet air.

### **1 BACT Analysis for NO<sub>x</sub> Emissions**

#### **a Step 1 - Identify all control technologies**

The District adopted District Rule 4320 on October 16, 2008. The NO<sub>x</sub> emission limit requirements in District Rule 4320 are lower than the current BACT limits, therefore a project specific BACT analysis will be performed to determine BACT for this project. District Rule 4320 includes a compliance option that limits oilfield steam generators with heat input ratings greater than 20 MMBtu/hr to 7 ppm @ 3% O<sub>2</sub>. This emission limit is Achieved in Practice control technology for the BACT analysis. District Rule 4320 also contains an enhanced schedule option that allows applicants additional time to meet the requirements of the rule. The enhanced schedule NO<sub>x</sub> emission limit requirement is 5 ppmv @ 3% O<sub>2</sub>. Since this is an enhanced option in the rule, it will be considered the Technologically Feasible control technology for the BACT analysis.

The SJVAPCD BACT Clearinghouse guideline 1.2.1 has been rescinded. Therefore a new BACT analysis is required. The following are possible control technologies:

- 1) 5 ppmvd @ 3% O<sub>2</sub> with SCR
- 2) 7 ppmvd @ 3% O<sub>2</sub>

#### **b Step 2 - Eliminate technologically infeasible options**

There are no technologically infeasible options to eliminate from step 1.

#### **c Step 3 - Rank remaining options by control effectiveness**

- 1) 5 ppmvd @ 3% O<sub>2</sub> with SCR
- 2) 7 ppmvd @ 3% O<sub>2</sub>

#### **d Step 4 - Cost Effectiveness Analysis**

A cost effective analysis is required for technologically feasible control options that are not proposed. The applicant is proposing a NO<sub>x</sub> limit of 7 ppmvd @ 3% O<sub>2</sub>, therefore, a cost effective analysis is required for the 5 ppmvd @ 3% O<sub>2</sub> option (SCR).

## SCR Cost Effectiveness Analysis

### Assumptions

Industry standard (IS) assumed to be a NO<sub>x</sub> emission rate of 15 ppmv @ 3% O<sub>2</sub> in accordance with District Rule 4306

A unit's maximum emissions are defined by the burner size multiplied by the emissions factor and a maximum annual operating schedule of 8,760 hr/year

### Calculations

Industry Standard NO<sub>x</sub> Emissions = 85 MMBtu/hr x 0.018 lb/MMBtu x 8,760 hrs/year  
= 13,403 lb/year

Tech Feasible NO<sub>x</sub> Emissions = 85 MMBtu/hr x 0.006 lb/MMBtu x 8,760 hrs/year  
= 4,468 lb/year

### Selective Catalytic Reduction system (Detailed costs follow the BACT Analysis Section)

Capital Cost (provided by PCL Industrial Services, Inc with this project) **\$745,000**  
(includes all purchased equipment, taxes, freight, and installation of SCR for an 85.0 MMBtu/hr unit)

Equivalent Annual Capital Cost (Capital Recovery)

$$A = P \frac{i(1+i)^n}{(1+i)^n - 1} \quad \text{where,}$$

A = Equivalent Annual Control Equipment Capital Cost

P = Present value of the control equipment, including installation cost

i = interest rate (use 10%, or demonstrate why alternate is more representative of the specific operation)

n = equipment life (assume 10 years or demonstrate why alternate is more representative of the specific operation)

Where

P = \$745,000

i = 10%

n = 10 years

A = \$121,212

Operating costs are estimated by PCL Industrial Services to be \$125,000/yr resulting in the following total annualized cost

$\$121,212 + \$125,000 = \$246,212$

### **NO<sub>x</sub> Reduction due to Selective Catalytic Reduction system**

Total reduction = Emissions<sub>15 ppm</sub> – Emissions<sub>5 ppm</sub>

Total reduction = 13 403 lb/year– 4,468 lb/year

Total reduction = 8,935 lb/year = 4 47 ton NO<sub>x</sub> per year

### **Cost effectiveness**

Cost effectiveness = \$246,212/ 4 47 tpy

Cost effectiveness = \$55,081/ ton

The cost effectiveness is greater than the \$24,500/ton cost effectiveness threshold of the District BACT policy Therefore the use of SCR with ammonia injection is not cost effective and is not required as BACT

### **e Step 5 - Select BACT**

BACT for NO<sub>x</sub> emissions from this oil field steam generator is a NO<sub>x</sub> limit of 7 ppmvd @ 3% O<sub>2</sub> The applicant has proposed to install an oil field steam generator with a NO<sub>x</sub> limit of 7 ppmvd @ 3% O<sub>2</sub>, therefore BACT for NO<sub>x</sub> emissions is satisfied

## **2 BACT Analysis for SO<sub>x</sub> Emissions**

Oxides of sulfur (SO<sub>x</sub>) emissions occur from the combustion of the sulfur, which is present in the fuel

### **a Step 1 - Identify all control technologies**

The SJVAPCD BACT Clearinghouse guideline 1.2.1, 1<sup>st</sup> quarter 2005, identifies for achieved in practice BACT for SO<sub>x</sub> emissions from oil field steam generators ≥5 MMBtu/hr as follows

- 1) Natural gas, LPG, waste gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf, or use of a continuously operating SO<sub>2</sub> scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO<sub>2</sub> at stack O<sub>2</sub>

No technologically feasible alternatives or control alternatives identified as alternate basic equipment for this class and category of source are listed

### **b Step 2 - Eliminate technologically infeasible options**

There are no technologically infeasible options to eliminate from step 1

### **c Step 3 - Rank remaining options by control effectiveness**

- 1) Natural gas, LPG, waste gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf, or use of a continuously operating SO<sub>2</sub> scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO<sub>2</sub> at stack O<sub>2</sub>

### **d Step 4 - Cost Effectiveness Analysis**

The only control technology in the ranking list from Step 3 has been achieved in practice. Therefore, per the District's BACT Policy (dated 11/9/99) Section IX D 2, the cost effectiveness analysis is not required.

### **e Step 5 - Select BACT**

The applicant has proposed to combust natural gas with a fuel sulfur content not exceed 1 gr-S/100 dscf, therefore BACT for SO<sub>x</sub> emissions is satisfied.

### **3 BACT Analysis for PM<sub>10</sub> Emissions**

Particulate matter (PM<sub>10</sub>) emissions result from the incomplete combustion of various elements in the fuel

#### **a Step 1 - Identify all control technologies**

The SJVAPCD BACT Clearinghouse guideline 1 2 1, 1<sup>st</sup> quarter 2005, identifies for achieved in practice BACT for PM<sub>10</sub> emissions from oil field steam generators ≥5 MMBtu/hr as follows

- 1) Natural gas, LPG, waste gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf, or use of a continuously operating SO<sub>2</sub> scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO<sub>2</sub> at stack O<sub>2</sub>

No technologically feasible alternatives or control alternatives identified as alternate basic equipment for this class and category of source are listed

#### **b Step 2 - Eliminate technologically infeasible options**

There are no technologically infeasible options to eliminate from step 1

#### **c Step 3 - Rank remaining options by control effectiveness**

- 1) Natural gas LPG, waste gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf, or use of a continuously operating SO<sub>2</sub> scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO<sub>2</sub> at stack O<sub>2</sub>

#### **d Step 4 - Cost Effectiveness Analysis**

The only control technology in the ranking list from Step 3 has been achieved in practice Therefore, per the District's BACT Policy (dated 11/9/99) Section IX D 2, the cost effectiveness analysis is not required

#### **e Step 5 - Select BACT**

The applicant has proposed to combust natural gas with a fuel sulfur content not to exceed 1 gr-S/100 dscf, therefore BACT for PM<sub>10</sub> emissions is satisfied



#### **4 BACT Analysis for VOC Emissions**

Volatile organic compounds (VOC) emissions are generated from the incomplete combustion of the fuel

##### **a Step 1 - Identify all control technologies**

The SJVAPCD BACT Clearinghouse guideline 1 2 1, 1<sup>st</sup> quarter 2005, identifies for achieved in practice BACT for VOC emissions from oil field steam generators  $\geq 5$  MMBtu/hr as follows

- 1) Gaseous fuel

No technologically feasible alternatives or control alternatives identified as alternate basic equipment for this class and category of source are listed

##### **b Step 2 - Eliminate technologically infeasible options**

There are no technologically infeasible options to eliminate from step 1

##### **c Step 3 - Rank remaining options by control effectiveness**

- 1) Gaseous fuel

##### **d Step 4 - Cost effectiveness analysis**

The only control technology in the ranking list from Step 3 has been achieved in practice Therefore, per the District's BACT Policy (dated 11/9/99) Section IX D 2, the cost effectiveness analysis is not required

##### **e Step 5 - Select BACT**

BACT for VOC emissions from an oil field steam generator is gaseous fuel The applicant has proposed to install oil field steam generators fired on gaseous fuel, therefore BACT for VOC emissions is satisfied

**APPENDIX F**  
**HRA and AAQA**

## San Joaquin Valley Air Pollution Control District Risk Management Review

To David Torii – Permit Services  
From Cheryl Lawler – Technical Services  
Date January 14, 2014  
Facility Name Cnmson Resource Management  
Location S25, T31S, R22E  
Application #(s) S-2018-29-0 & 30-0  
Project # S-1134252

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### A RMR SUMMARY

RMR Summary			
Categories	Two NG/TEOR Gas Generators (Units 29 0 & 30-0)	Project Totals	Facility Totals
Prioritization Score	0 01*	0 01	0 29
Acute Hazard Index	N/A	N/A	N/A
Chronic Hazard Index	N/A	N/A	N/A
Maximum Individual Cancer Risk	N/A	N/A	N/A
T BACT Required?	No		
Special Permit Conditions?	Yes		

### Proposed Permit Conditions

To ensure that human health risks will not exceed District allowable levels, the following permit conditions must be included for

#### Units 29-0 & 30-0

- 1 {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction [District Rule 4102]  
N

## B RMR REPORT

### I Project Description

Technical Services received a request on November 13, 2013, to perform a Risk Management Review (RMR) and Ambient Air Quality Analysis (AAQA) for two new 85 MMBtu/hr Natural Gas/TEOR Gas generators

### II Analysis

For the Risk Management Review, toxic emissions from the generators fueled by Natural Gas and TEOR Gas were calculated using emission factors from *December 2009 Emission Estimation Protocol for Petroleum Refineries* by the American Petroleum Institute and Western States Petroleum Association. In accordance with the District's *Risk Management Policy for Permitting New and Modified Sources* (APR 1905-1, March 2, 2001), risks from the proposed project were prioritized using the procedures in the 1990 CAPCOA Facility Prioritization Guidelines and incorporated in the District's HEART's database. The prioritization score was less than 1.0 (see RMR Summary Table). Therefore, no further analysis was necessary.

The following parameters were used for the review:

Analysis Parameters			
Source Type	Point	Closest Receptor (m)	1472
Stack Height (m)	6.1	Closest Receptor Type	Business
Stack Diameter (m)	1.07	Project Location Type	Rural
Stack Gas Temperature (K)	366	Natural Gas/TEOR Gas Rate (mmscf/each)	0.09 hr 744.6 yr
Stack Gas Velocity (m/s)	9.51		

Technical Services also performed modeling for criteria pollutants CO, NO<sub>x</sub>, SO<sub>x</sub>, and PM<sub>10</sub>, as well as the RMR. Emission rates used for criteria pollutant modeling for each generator were 38.8 lb/day CO, 14.9 lb/day NO<sub>x</sub>, 6.1 lb/day SO<sub>x</sub>, and 15.5 lb/day PM<sub>10</sub>.

The results from the Criteria Pollutant Modeling are as follows:

### Criteria Pollutant Modeling Results\*

Values are in µg/m

NG/TEOR Gas Generators	1 Hour	3 Hours	8 Hours	24 Hours	Annual
CO	Pass	X	Pass	X	X
NO <sub>x</sub>	Pass	X	X	X	Pass
SO <sub>x</sub>	Pass	Pass	X	Pass	Pass
PM <sub>10</sub>	X	X	X	Pass	Pass

\*Results were taken from the attached PSD spreadsheet.

<sup>1</sup>The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165(b)(2).

<sup>2</sup>The project was compared to the 1-hour NO<sub>2</sub> National Ambient Air Quality Standard that became effective on April 12, 2010, using the District's approved procedures.

### III Conclusions

The criteria modeling runs indicate the emissions from the proposed equipment will not cause or significantly contribute to a violation of a State or National AAQS

For each unit the prioritization score is not above 1.0. In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT)

To ensure that human health risks will not exceed District allowable levels, the permit conditions listed on Page 1 of this report must be included for the proposed project

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

### **Attachments**

RMR Request Form & Attachments

Prioritization

AAQA Results

Facility Summary

## **APPENDIX G**

### **Draft ATCs**

San Joaquin Valley  
Air Pollution Control District

**AUTHORITY TO CONSTRUCT**

PERMIT NO S-2018 20-1

ISSUANCE DATE DRAFT

LEGAL OWNER OR OPERATOR CRIMSON RESOURCE MANAGEMENT  
MAILING ADDRESS 5001 CALIFORNIA AVE SUITE 206  
BAKERSFIELD CA 93309

LOCATION HEAVY OIL WESTERN STATIONARY SOURCE

SECTION SE25 TOWNSHIP 31S RANGE 22E

**EQUIPMENT DESCRIPTION**

MODIFICATION OF 986 BBL FIXED ROOF STORAGE TANK LOWER TVP LIMIT FROM 11 PSIA TO 8

**CONDITIONS**

- 1 Permittee's crude oil production shall average less than 6,000 bbl/day from all operations within Kern County and permittee shall not engage in refining, transporting, or marketing of refined petroleum products [District Rule 4623]
- 2 {98} No air contaminant shall be released into the atmosphere which causes a public nuisance [District Rule 4102]
- 3 {15} No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity [District Rule 4101]
- 4 This tank shall be equipped with a pressure-vacuum (PV) relief valve set to within 10% of the maximum allowable working pressure of the tank, permanently labeled with the operating pressure settings, properly maintained in good operating order in accordance with the manufacturer's instructions, and shall remain in gas-tight condition except when the operating pressure exceeds the valve's set pressure [District Rule 2201]
- 5 This tank shall only store, place or hold organic liquid with a true vapor pressure (TVP) of less than 8.0 psia under all storage conditions [District Rule 2201]
- 6 Crude oil throughput shall not exceed 50 bbl/day based on a monthly average [District Rules 2201 and 4623]
- 7 Daily VOC emissions shall not exceed 107.2 lb/day [District Rule 2201]
- 8 Permittee shall conduct true vapor pressure (TVP) testing of the organic liquid stored in this tank within 60 days of initial startup, at least once every 24 months during summer (July - September), and/or whenever there is a change in the source or type of organic liquid stored in this tank [District Rules 2201 and 4623]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392 5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin Executive Director APCO

DAVID WARNER Director of Permit Services

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- 9 The TVP testing shall be conducted at actual storage temperature of the organic liquid in the tank. The permittee shall also conduct an API gravity testing [District Rules 2201 and 4623]
- 10 For crude oil with an API gravity of 26 degrees or less, the TVP shall be determined using the latest version of the Lawrence Berkeley National Laboratory "test Method for Vapor pressure of Reactive Organic Compounds in Heavy Crude Oil Using Gas Chromatograph", as approved by ARB and EPA [District Rules 2201 and 4623]
- 11 For crude oil with an API gravity of greater than 26 degrees, the TVP shall be determined by measuring the Reid Vapor Pressure (RVP) using ASTM D 323-94 (Test Method for Vapor Pressure for Petroleum Products), and converting the RVP to TVP at the maximum organic liquid storage temperature [District Rules 2201 and 4623]
- 12 The API gravity of crude oil or petroleum distillate shall be determined by using ASTM Method D 287 e1 "Standard Test Method for API Gravity of Crude Petroleum and Petroleum Products (Hydrometer Method)". Sampling for API gravity shall be performed in accordance with ASTM Method D 4057 "Standard Practices for Manual Sampling of Petroleum and Petroleum Products " [District Rules 2201 and 4623]
- 13 Permittee shall maintain monthly records of average daily crude oil throughput and shall keep accurate records of each organic liquid stored in the tank, including its storage temperature, TVP and API gravity [District Rules 2201 and 4623]
- 14 All records shall be maintained for a period of at least five years and shall be made readily available for District inspection upon request [District Rules 2201 and 4623]

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San Joaquin Valley  
Air Pollution Control District

**AUTHORITY TO CONSTRUCT**

PERMIT NO S 2018-29 0

ISSUANCE DATE DRAFT

LEGAL OWNER OR OPERATOR CRIMSON RESOURCE MANAGEMENT  
MAILING ADDRESS 5001 CALIFORNIA AVE SUITE 206  
BAKERSFIELD, CA 93309

LOCATION HEAVY OIL WESTERN STATIONARY SOURCE

**EQUIPMENT DESCRIPTION**

85 MMBTU/HR NATURAL GAS/TEOR GAS-FIRED STEAM GENERATOR WITH A NORTH AMERICAN ULTRA LOW NOX MAGNA FLAME LE BURNER (OR EQUIVALENT) WITH FLUE GAS RECIRCULATION

**CONDITIONS**

- 1 The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this Authority to Construct. Approval of the equivalent equipment shall be made only after the District's determination that the submitted design and performance of the proposed alternate equipment is equivalent to the specifically authorized equipment [District Rule 2201]
- 2 The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emission rates, equipment drawing(s), and operational characteristics/parameters [District Rule 2201]
- 3 Alternate equipment shall be of the same class and category of source as the equipment authorized by the Authority to Construct [District Rule 2201]
- 4 No emission factor and no emission shall be greater for the alternate equipment than for the proposed equipment. No changes in the hours of operation, operating rate, throughput, or firing rate may be authorized for any alternate equipment [District Rule 2201]
- 5 No air contaminant shall be released into the atmosphere which causes a public nuisance [District Rule 4102]
- 6 No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as or darker than, Ringelmann 1 or 20% opacity [District Rule 4101] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

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Seyed Sadredin, Executive Director, APCO

DAVID WARNER, Director of Permit Services  
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- 7 All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere [District Rule 2201]
- 8 The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction [District Rule 4102]
- 9 Except for periods of startup and shutdown, emissions from the natural gas-fired unit shall not exceed any of the following limits: 7 ppmvd NO<sub>x</sub> @ 3% O<sub>2</sub> or 0.008 lb NO<sub>x</sub>/MMBtu, 0.00285 lb-SO<sub>x</sub>/MMBtu, 0.0076 lb-PM<sub>10</sub>/MMBtu, 25 ppmvd CO @ 3% O<sub>2</sub> or 0.019 lb-CO/MMBtu, or 0.0055 lb VOC/MMBtu [District Rules 2201, 4305, 4306, 4320 and 4801]
- 10 Duration of start-up or shutdown shall not exceed two hours each per occurrence. During start-up or shutdown, the emissions control system shall be in operation, and emissions shall be minimized insofar as technologically possible. The operator shall maintain daily records of the duration of start-up and shutdown periods [District Rules 4305, 4306, and 4320]
- 11 Start-up is defined as the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation. Shutdown is defined as the period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off [District Rules 4305, 4306, and 4320]
- 12 Source testing to measure natural gas-combustion NO<sub>x</sub> and CO emissions from this unit shall be conducted within 60 days of initial startup and at least once every twelve (12) months thereafter. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months [District Rules 2201, 4305, 4306, and 4320]
- 13 The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance [District Rules 4305, 4306, and 4320]
- 14 Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing [District Rule 1081]
- 15 The results of each source test shall be submitted to the District within 60 days thereafter [District Rule 1081]
- 16 NO<sub>x</sub> emissions for source test purposes shall be determined using EPA Method 7E or ARB Method 100 on a ppmv basis, or EPA Method 19 on a heat input basis [District Rules 4305, 4306, and 4320]
- 17 CO emissions for source test purposes shall be determined using EPA Method 10 or ARB Method 100 [District Rules 4305, 4306 and 4320]
- 18 Stack gas oxygen (O<sub>2</sub>) shall be determined using EPA Method 3 or 3A or ARB Method 100 [District Rules 4305, 4306, and 4320]
- 19 Fuel sulfur content shall be determined using EPA Method 11 or Method 15 [District Rule 4320]
- 20 All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4306 [District Rules 4305, 4306, and 4320]
- 21 For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit, the test cannot be used to demonstrate compliance with an applicable limit [District Rules 4305, 4306, and 4320]
- 22 PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume [District Rule 4320]

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CONDITIONS CONTINUE ON NEXT PAGE

- 23 If the steam generator is not fired on PUC regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit [District Rule 4320]
- 24 When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually [District Rule 4320]
- 25 If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value [District Rule 4320]
- 26 The permittee shall monitor and record the stack concentration of NO<sub>x</sub>, CO and O<sub>2</sub> at least once every month (in which a source test is not performed) using a portable emission monitor that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month [District Rules 4305, 4306, and 4320]
- 27 If either the NO<sub>x</sub> or CO concentrations corrected to 3% O<sub>2</sub>, as measured by the portable analyzer, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition [District Rules 4305, 4306, and 4320]
- 28 All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period [District Rules 4305, 4306, and 4320]
- 29 The permittee shall maintain records of (1) the date and time of NO<sub>x</sub>, CO, and O<sub>2</sub> measurements, (2) the O<sub>2</sub> concentration in percent and the measured NO<sub>x</sub> and CO concentrations corrected to 3% O<sub>2</sub>, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range [District Rules 4305, 4306, and 4320]
- 30 All records shall be maintained and retained on site for a minimum of five (5) years, and shall be made available for District inspection upon request [District Rules 1070, 4305, 4306, 4320, and 40 CFR 60.48c(1)]
- 31 ATCs S 2018-20-1 shall be implemented prior to or concurrently with this ATC [District Rule 2201]

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San Joaquin Valley  
Air Pollution Control District

**AUTHORITY TO CONSTRUCT**

PERMIT NO S-2018-30 0

ISSUANCE DATE DRAFT

LEGAL OWNER OR OPERATOR CRIMSON RESOURCE MANAGEMENT  
MAILING ADDRESS 5001 CALIFORNIA AVE, SUITE 206  
BAKERSFIELD, CA 93309

LOCATION HEAVY OIL WESTERN STATIONARY SOURCE

**EQUIPMENT DESCRIPTION**

85 MMBTU/HR NATURAL GAS/TEOR GAS-FIRED STEAM GENERATOR WITH A NORTH AMERICAN ULTRA-LOW NOX MAGNA-FLAME LE BURNER (OR EQUIVALENT) WITH FLUE GAS RECIRCULATION

**CONDITIONS**

- 1 The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this Authority to Construct. Approval of the equivalent equipment shall be made only after the District's determination that the submitted design and performance of the proposed alternate equipment is equivalent to the specifically authorized equipment [District Rule 2201]
- 2 The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emission rates, equipment drawing(s), and operational characteristics/parameters [District Rule 2201]
- 3 Alternate equipment shall be of the same class and category of source as the equipment authorized by the Authority to Construct [District Rule 2201]
- 4 No emission factor and no emission shall be greater for the alternate equipment than for the proposed equipment. No changes in the hours of operation, operating rate, throughput, or firing rate may be authorized for any alternate equipment [District Rule 2201]
- 5 No air contaminant shall be released into the atmosphere which causes a public nuisance [District Rule 4102]
- 6 No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity [District Rule 4101] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

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Sayed Sadredin, Executive Director, APCO

DAVID WARNER, Director of Permit Services

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- 7 All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere [District Rule 2201]
- 8 The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction [District Rule 4102]
- 9 Except for periods of startup and shutdown, emissions from the natural gas-fired unit shall not exceed any of the following limits: 7 ppmvd NO<sub>x</sub> @ 3% O<sub>2</sub> or 0.008 lb-NO<sub>x</sub>/MMBtu, 0.00285 lb-SO<sub>x</sub>/MMBtu, 0.0076 lb PM<sub>10</sub>/MMBtu, 25 ppmvd CO @ 3% O<sub>2</sub> or 0.019 lb-CO/MMBtu, or 0.0055 lb-VOC/MMBtu [District Rules 2201, 4305, 4306, 4320 and 4801]
- 10 Duration of start-up or shutdown shall not exceed two hours each per occurrence. During start-up or shutdown, the emissions control system shall be in operation, and emissions shall be minimized insofar as technologically possible. The operator shall maintain daily records of the duration of start-up and shutdown periods [District Rules 4305, 4306, and 4320]
- 11 Start up is defined as the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, including the time required by the unit's emission control system to reach full operation. Shutdown is defined as the period of time during which a unit is taken from an operational to a non-operational status by allowing it to cool down from its operating temperature to ambient temperature as the fuel supply to the unit is completely turned off [District Rules 4305, 4306, and 4320]
- 12 Source testing to measure natural gas-combustion NO<sub>x</sub> and CO emissions from this unit shall be conducted within 60 days of initial startup and at least once every twelve (12) months thereafter. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. If the result of the 36 month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months [District Rules 2201, 4305, 4306, and 4320]
- 13 The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance [District Rules 4305, 4306, and 4320]
- 14 Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing [District Rule 1081]
- 15 The results of each source test shall be submitted to the District within 60 days thereafter [District Rule 1081]
- 16 NO<sub>x</sub> emissions for source test purposes shall be determined using EPA Method 7E or ARB Method 100 on a ppmv basis, or EPA Method 19 on a heat input basis [District Rules 4305, 4306, and 4320]
- 17 CO emissions for source test purposes shall be determined using EPA Method 10 or ARB Method 100 [District Rules 4305, 4306, and 4320]
- 18 Stack gas oxygen (O<sub>2</sub>) shall be determined using EPA Method 3 or 3A or ARB Method 100 [District Rules 4305, 4306, and 4320]
- 19 Fuel sulfur content shall be determined using EPA Method 11 or Method 15 [District Rule 4320]
- 20 All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4306 [District Rules 4305, 4306, and 4320]
- 21 For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit [District Rules 4305, 4306, and 4320]
- 22 PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume [District Rule 4320]

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CONDITIONS CONTINUE ON NEXT PAGE

- 23 If the steam generator is not fired on PUC regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit [District Rule 4320]
- 24 When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually [District Rule 4320]
- 25 If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value [District Rule 4320]
- 26 The permittee shall monitor and record the stack concentration of NO<sub>x</sub>, CO, and O<sub>2</sub> at least once every month (in which a source test is not performed) using a portable emission monitor that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month [District Rules 4305, 4306, and 4320]
- 27 If either the NO<sub>x</sub> or CO concentrations corrected to 3% O<sub>2</sub>, as measured by the portable analyzer, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of the performing the notification and testing required by this condition [District Rules 4305, 4306, and 4320]
- 28 All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period [District Rules 4305, 4306, and 4320]
- 29 The permittee shall maintain records of (1) the date and time of NO<sub>x</sub>, CO, and O<sub>2</sub> measurements, (2) the O<sub>2</sub> concentration in percent and the measured NO<sub>x</sub> and CO concentrations corrected to 3% O<sub>2</sub>, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range [District Rules 4305, 4306, and 4320]
- 30 All records shall be maintained and retained on site for a minimum of five (5) years, and shall be made available for District inspection upon request [District Rules 1070, 4305, 4306, 4320, and 40 CFR 60.48c(i)]
- 31 ATCs S 2018-20-1 shall be implemented prior to or concurrently with this ATC [District Rule 2201]

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